VOL. 160 — NO. 4

JANUARY 28, 1961

# Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

W. A. Wadsworth of Bell Telephone Laboratories and G. L. Taylor of Western Electric make final checks on first computer built from complete data furnished by another computer. This computer has been shipped to Ascension Island where it will be used in tracking tests of missiles launched from Cape Canaveral. See page 41 for full details.

Circulation This Issue
14,191, of Which
13,494 Is Paid

MANAGEMENT · PLANT · TRAFFIC · COMMERCIAL · LEGAL · ACCOUNTING

# TEN TIMES AROUND THE WORLD

**One Independent manufacturer has supplied multiplex equipment for more than 250,000 channel miles of microwave communications—enough to *circle the globe 10 times* . . . or to reach well beyond the moon!**

**This impressive mileage, plus many more channels in locations that cannot be specified, makes the manufacturer (Stromberg-Carlson) the Number One Independent supplier of commercial multiplex gear in the U. S. and Canada. Nearly all the major suppliers of R. F. equipment—R. C. A., Motorola, General Electric, Philco, Collins, Westinghouse—have selected Stromberg-Carlson 511 Multiplex for voice frequency communication in microwave systems where they held the prime contract.**

FRANKLY, we at Stromberg-Carlson thought that the position of our company as Number One Independent supplier of multiplex equipment was a well-known fact. A recent inquiry asking if we were "planning to enter the market" would indicate that the company's leadership in the area of multiplex gear has not been sufficiently emphasized.

The point of all this, as far as *you* are concerned, is that you can specify Stromberg-Carlson Multiplex for application in any microwave system. In doing this you call for equipment that is second to none in reliability; that has proved its capabilities for exacting service demands in varying climates over a long period of time.

### *Deepfreeze to Searing Desert*

Among the users of Stromberg-Carlson 511 Multiplex are:

Telephone Companies
Utilities (Power)
Pipeline Companies
Railroads
State and Municipal Agencies

The projects provide vital communication services in a manner that could not be justified through alternative approaches. Some installations face the sub-zero extremes of Canada; others hop over the impenetrable jungles of Burma. One of the longest single routes crosses the Arabian Desert through uninhabited wastes of drifting sand and searing heat.

The majority of applications, however, are dramatic only in respect to the *economies achieved* by the selection of radio-multiplexing for the communication job that had to be done. This feasibility is being verified by all users, but this is especially true for telephone companies with expanding requirements for high-density toll-grade circuits. Stromberg-Carlson's entry into the field introduced telephone experience to the developing medium of point-to-point radio communication.

### *Meets the Requirements*

No. 511 channelizing equipment meets current requirements of microwave communication: telephone circuits, teletype, telemetering and control signals. Channels may be added or dropped, to meet changing needs, with a minimum of system modification not found in other types of multiplex gear because of Stromberg-Carlson's unique arrangement of common equipment.

This multiplex has provided the basis for justifying a microwave facility as small as 2 channels; it is also supplying 90 toll-grade channels for one of the microwave systems in use by the Rochester (N. Y.) Telephone Corporation, and more than half this number of channels for another leg of this company's radio toll circuits. This voice frequency capacity may be extended to 240 channels whenever desired.

In addition to the voice channels, tone transmitters and receivers may be inserted *below* the lowest voice channels of each group, or inserted *through* any voice channel to provide telemetering or control circuits. Optional telegraph units may also be intermixed on the carrier as auxiliary equipment that may be added or deleted at any time without disrupting the system.

### *Pole Lines Impractical*

A microwave system may be chosen for several reasons. In the case of the Continental Oil Company many of the stations were off-shore "Texas Towers," widely separated, so that over-water transmission was the only practicable approach. Here the multiplex is arranged to provide multiple voice channels, tone signalling and telemetering in a full RING SYSTEM from headquarters to each of the off-shore rigs.

Rugged terrain for many years prevented the building of an east-west bridge between toll circuits running up the Pacific Coast and those following California's Central Valley. Now both the Western Telephone Company and the Siskiyou Telephone Company leap over the Coastal Range with microwave — retain toll commissions that will pay for the installation in a few years.

### *Toll Also Applies to Roads*

Stromberg-Carlson Multiplex provides full talk circuits as well as signalling facilities on a majority of the principal Toll Turnpikes having voice frequency communication via microwave. Latest of these to be installed—the Garden State Parkway in New Jersey —will include several types of voice and tone transmission and switching to promote speed with increased safety on high-traffic arterial roads. An increasing number of states and municipalities have turned to microwave for communication with law enforcement officers and maintenance crews patrolling the highways.

ADVERTISEMENT

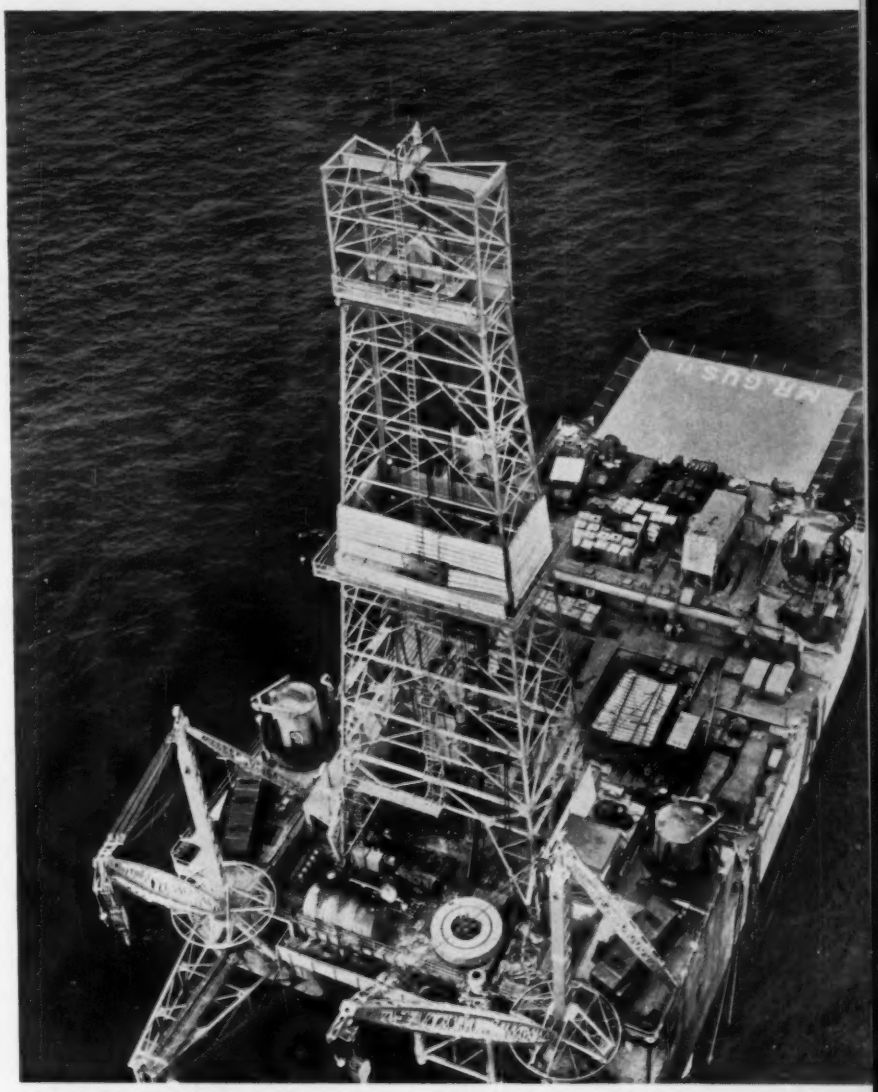
### *Load-Dispatching Systems*

Sharing the generative capacity of neighboring hydro-electric power systems brings to each the economy and reliability of a much larger plant than any one could individually afford. The interconnecting networks of the Manitoba Hydro-Electric Board with other large systems in Canada spanning three time zones could not operate efficiently without the load frequency control system available with microwave and 511 Multiplex. The earlier method of communication over privately owned land lines proved inadequate for the expansion in electric consumption during the '50s. Also technological advances in such areas as supervisory control, telemetering and dispatching methods could not be met with existing systems. Microwave offered economy in construction of new or parallel routes, and had the further advantage of providing high-density circuits with unlimited possibilities for future expansion.

### *Multiplex Puts Intelligence onto a Microwave System*

If microwave is a super-highway providing the best route from point to point, multiplex is the means of access to this highway for a wide assortment of traffic from many points of origin. It keeps traffic moving in lanes, discharges it at multi-level interchanges for equally varied destinations.

Multiplex, then, is the dollar-producing portion of a microwave system. No. 511 Multiplex — lowest in cost, most versatile in application—played an important part in changing the concept of microwave from a technological possibility for meeting the unusual problem, to an economically reasonable approach to the day-to-day demands of modern communication.



**511 Multiplex is specified because of its versatility in application. The off-shore oil rig (above) is part of a full communication-automatic control RING SYSTEM in the Gulf of Mexico. Bays of multiplex channels (right) provide toll facilities over the Great Smokies for the Western Carolina Telephone Company. Antenna on facing page dominates Rochester skyline.**

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# FLASHES AND PLUGS

**TWEETING TELEPHONE.** "England's telephones may become 'strictly for the birds.'

"The British General Post Office, following a concentrated study, may take the ring out of the telephone and substitute the chirp of a bird.

"The British GPO telephone laboratories have found that much less of a power impulse is required to produce a chirp than to ring a bell. It also could be done electronically."—General Telephone Co. of Pennsylvania *News*.

•

**FOR EXCEPTIONALLY HARD PATTERNS?** A Milwaukee, Wis. teen-ager, working on a home sewing project, was in need of a pattern for the costume she was making. As she was about to dial a store, she paused to inquire which store department she should ask for.

"Yard goods," was the answer.

"Yard goods?" exclaimed the astonished young lady. "Why, I thought that was where they sold rakes and lawnmowers and things like that."

•

**NO LITTLE BIRD TOLD HIM.** Ever forget your home telephone number? It's annoying, but especially so if yours is an unlisted number. At least, Wyoming Senator Gale McGee learned a secret when he tried to get his unlisted number (which he had forgotten) from the telephone company.

Early this year, according to the AP, Senator McGee wanted to call home. Despite his pleas to the operators, a supervisor, and certain Chesapeake & Potomac Telephone Co. executives, in Washington, D. C., the number was not divulged. The C&P manager told him, "Your number wouldn't stay unlisted very long if we gave it to everyone who insisted he was Senator McGee."

Fortunately, for McGee, a secretary in his office telephoned his next-door neighbor, who ran over and told Mrs. McGee to telephone her husband. However, the senator contended the wait was about 3 hours.

•

**FATHER TRANQUILIZER NEEDED.** The telephone being the great favorite it is with teens and pre-teens, a Whitefish Bay, Wis. father decided at Christmas to make the telephone traffic at his house a bit easier, and gave a telephone, exclusively for *their* use to his three daughters, Lindell, 17, Janet, 15, and Mary Ann, 12.

The girls' delight knew no bounds, because they had—not only their own telephone, but another. When their father came home, he found Janet with both telephones cupped to her ears, listening to two conversations at once!

**CHANGE OF ADDRESS**

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# Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

*1901 — 60 years — 1961*

**January 28, 1961**


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# ANNOUNCEMENT

Some of our customers and distributors have expressed concern that, with the introduction of our new line of FLOTROL rectifiers and other devices using solid-state components, we are discontinuing the manufacture of LORAIN equipment using selenium rectifier and magnetic components. This is not the case.

Lorain *is not* discontinuing the production of FLOTROL charger-rectifiers, SUB-CYCLE ringing converters and LORAIN power supply units of the type which have served the communications industry so reliably in the past. LORAIN is still supplying the continuing demand of the communications industry for these dependable units.

LORAIN has also designed and is producing for the communications industry, the most advanced charger-rectifier equipment, frequency converters, tone generators and power supply units which utilize silicon rectifiers, transistors and other solid-state devices.

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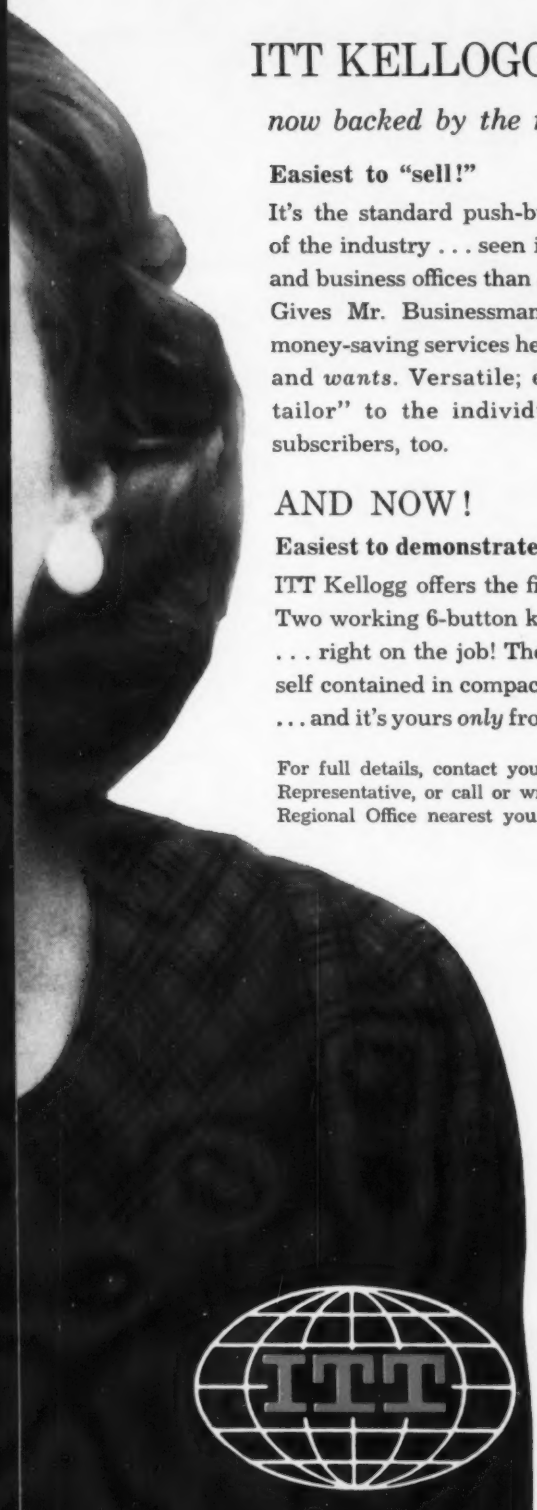

# ITT KELLOGG K-1A1 KEY SYSTEM TELEPHONES

*now backed by the most complete business phone promotion program ever!*

**Easiest to "sell!"**

It's the standard push-button phone system of the industry . . . seen in more national ads and business offices than all others combined! Gives Mr. Businessman *all* the time-and-money-saving services he understands, needs, and *wants*. Versatile; easiest to "custom-tailor" to the individual needs of your subscribers, too.

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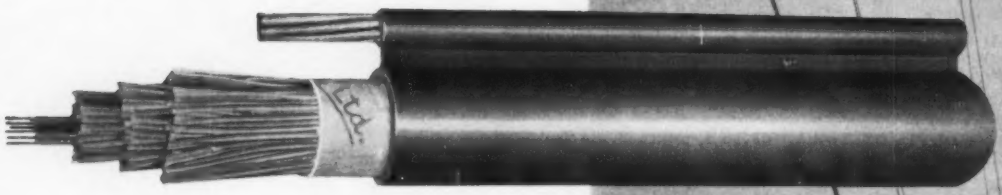
# HITACHI

## This is the Gourd-type cable — a new shape that contains a suspension strand, a communication line, and the answer to several problems!



This unique local or exchange area cable developed by Hitachi derives its distinctive "gourd shape" from the polyvinyl chloride sheathing that totally encloses the polyethylene-insulated communication line as well as its parallel suspension strand. It can be used in all the applications of conventional PE-insulated PVC sheathed cable and, in addition, is suitable for installation on steep grades where paper-insulated lead sheathed cable could not be used.

Another notable feature of the gourd-shaped cable is that it dispenses with the need for hangers, making installation easier, cheaper and faster. It can be installed close to buildings and power lines with complete safety (the suspension strand can be grounded to reduce electrostatic induction in the latter instance), retains high transmission qualities under the most trying weather conditions, and successfully withstands attack by salt or airborne chemicals.

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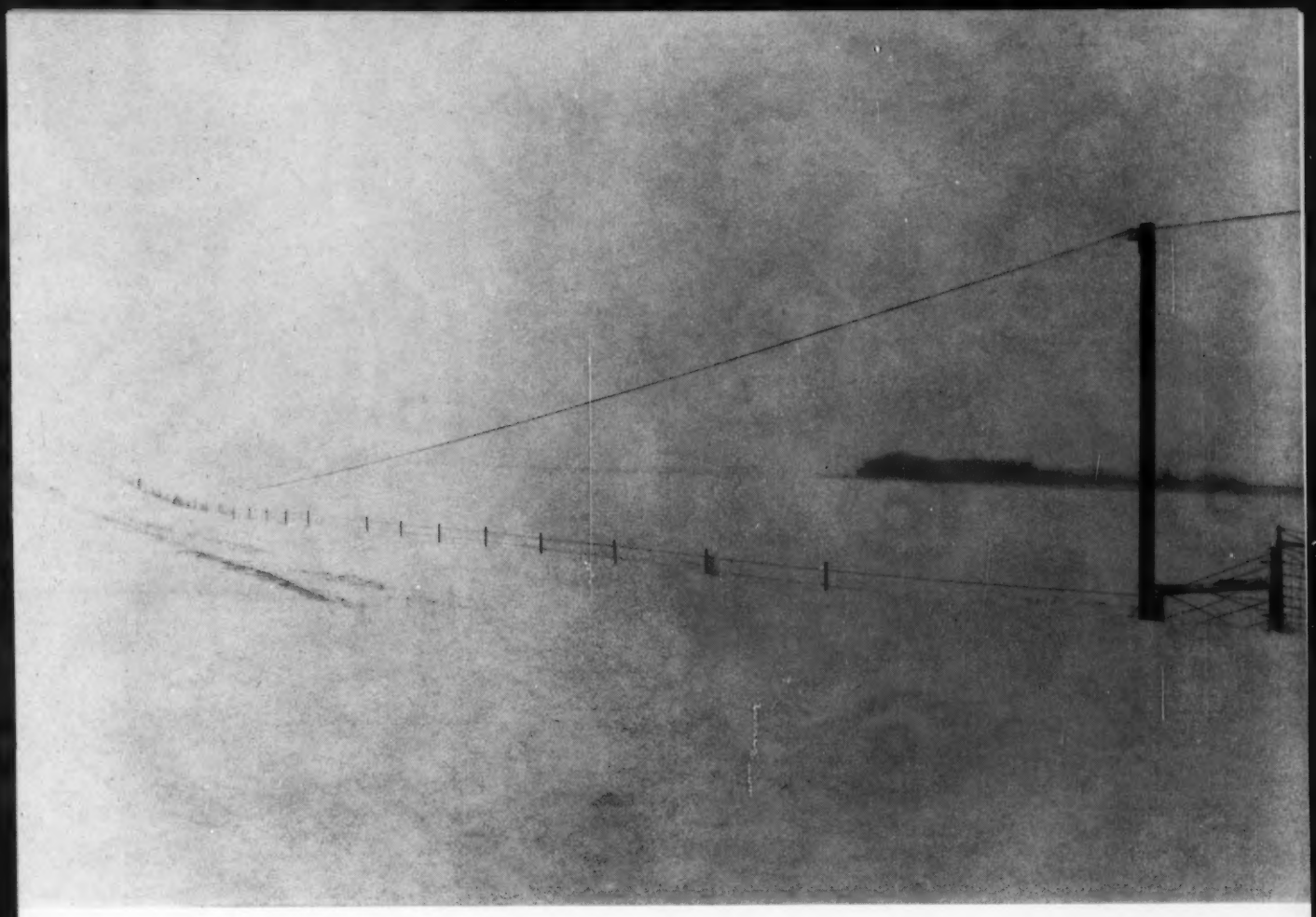
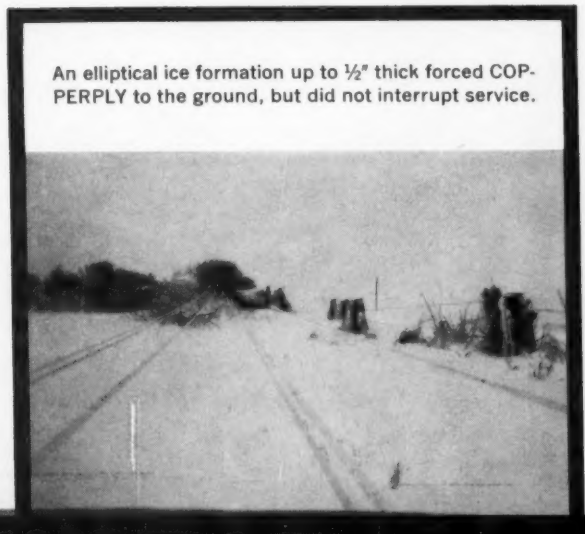


# "The lines are down... but I hear you perfectly"

These words came from a Tyler, Minnesota farm wife during a severe ice storm last winter. She could see that the lines were down. But there was no interruption in service.

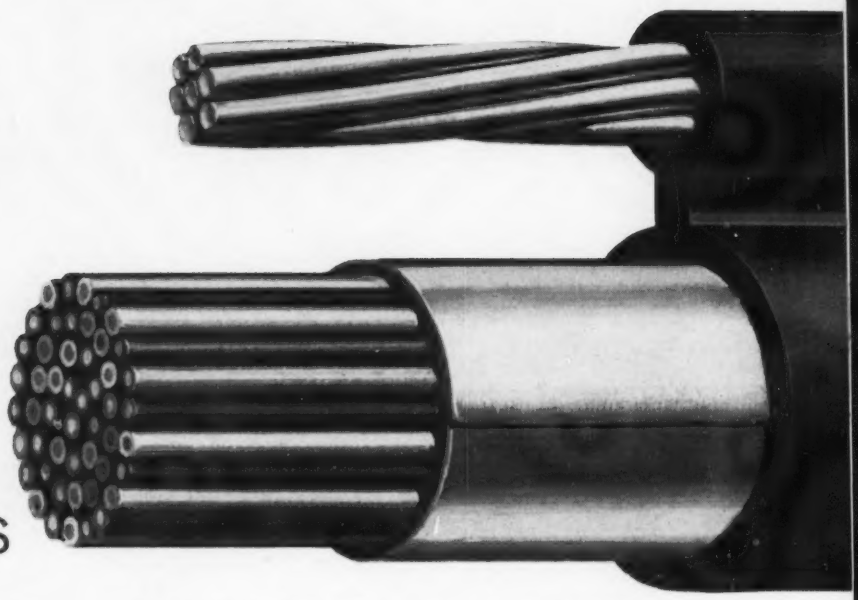
Throughout the entire countryside around Tyler, the Tyler Telephone Company had installed .080-25 COPPERPLY conductor wire in new long-span lengths (up to 1900 feet between poles) to test a completely new concept in aerial insulated wire plant. By stringing insulated COPPERPLY over such long spans, it is possible for the wire to rest on the ground, when loaded with ice, before it reaches 55% of ultimate strength. When the ice load melts, COPPERPLY returns to the normal unloaded height above the ground.



An elliptical ice formation up to ½" thick forced COPPERPLY to the ground, but did not interrupt service.

At Tyler, National-Standard COPPERPLY remained under three feet of snow in some places for as long as three months, with no interruption in line service. In addition, long-span systems cut installation costs, eliminated the problem of mid-span hits, reduced tree trimming and maintenance costs. For information on the complete line of COPPERPLY conductors, write National-Standard Company, Niles, Michigan. C-61-2

**NATIONAL-STANDARD COMPANY**
*Niles, Michigan*



GENERAL CABLE'S

# FIGURE 8 QUALPETH*

***ends cable spinning...saves you time and money***

Here's a great new cable that saves you time and money on outside plant construction. Figure 8 Qualpeth combines the cable and messenger in a single jacket of tough polyethylene. This revolutionary cable makes installation a one-step process. The entire cable-spinning operation is eliminated. Your lineman merely clamps Figure 8 to the pole.

Figure 8 is equipped with your choice of aluminum or copper shield. Normal splicing methods and closures are used. And, best of all, Figure 8 costs less installed than cable and messenger installed separately!

We're saving a copy of the Figure 8 Qualpeth catalog for you. To get your free copy, write: Automatic Electric Sales Corporation, Northlake, Illinois. And the next time you want to extend your outside plant, contact your AE representative. He'll give you all the money-saving details on Figure 8 Qualpeth.

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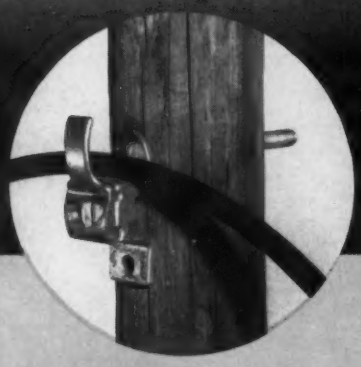
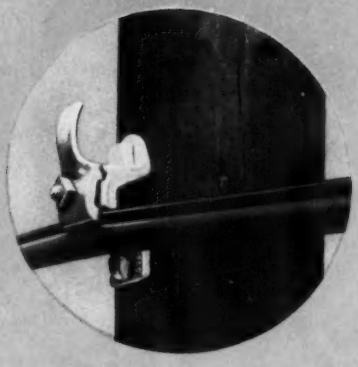
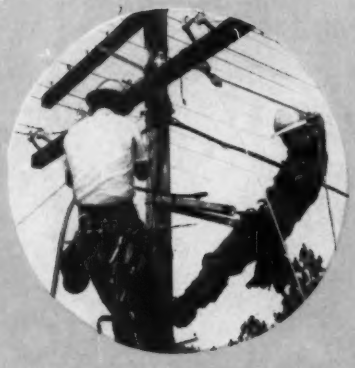
GENERAL SYSTEM



**SPECIAL SUPPORT MAKES INSTALLATION EASY**
This specially designed clamp is bolted to the pole to serve you two ways. First, the cable is strung over the top of the clamp for easy handling. After tensioning, the lineman just clamps Figure 8 to the pole, and the job's done.





**CREW INSTALLS FIGURE 8 FASTER**
At a recent installation of Figure 8, the crew saved so much time that the in-place cost was reduced by 10% over the cost of the present cable-spinning methods.

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ESB

Orbiting spacecraft of NASA's Project Mercury will be tracked by a global arrangement of 18 communications stations.

# Keeping track of a man in orbit

One day this year, the first U.S. astronaut may be rocketed into a globe-circling orbit, some 120 miles in space. Although he will be a mere dot in the heavens, a vast world-wide network of eighteen tracking stations—including two operating from ships at sea—will provide monitoring of every phase of the high-flying astronaut's journey in his orbiting spacecraft.

Linking each of the tracking stations with the project's Space Flight Center at Greenbelt, Maryland, and Mercury Control Center at Cape Canaveral, Florida, will be an array of Teletype equipment —Model 28 page printers, automatic send-receive sets and punched tape units. These Teletype communications devices will record and relay flight data collected by tracking and telemetering equipment from the spacecraft's instruments to the Flight Center, where an elaborate complex of data processing machines will coordinate and interpret flight data and provide directive information for the world-wide network of tracking stations.

Teletype Corporation is indeed proud to be a part of the Western Electric industrial team selected by the National Aeronautics and Space Administration (NASA) to build the vast communications network so vital to Project Mercury.

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**CORPORATION**
SUBSIDIARY OF *Western Electric Company* INC.
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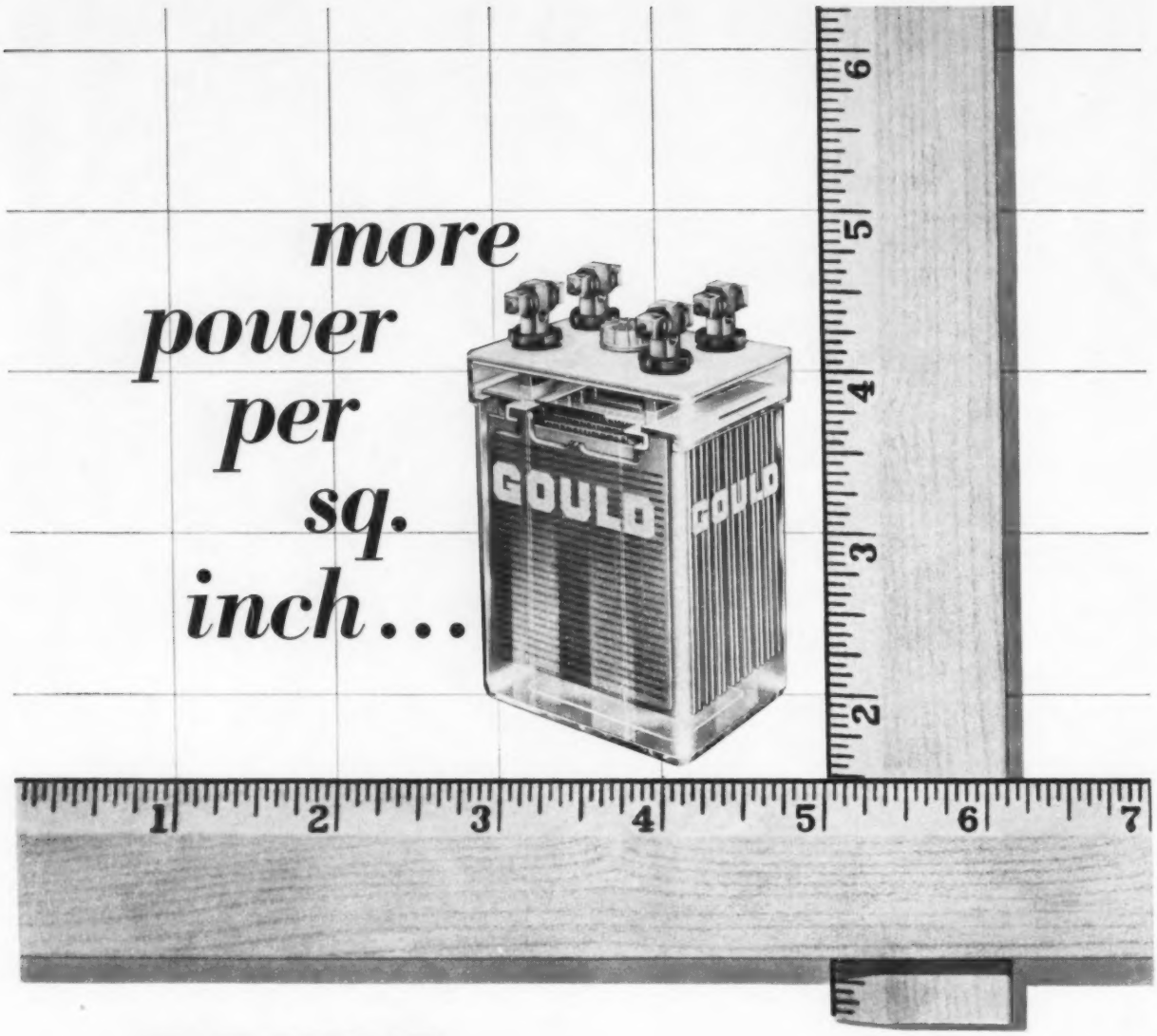
Teletype page printer, tape punch and reader units will be used throughout Project Mercury's global communications network to gather and relay flight data.

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In the new, compact Plastrite Jar, Gould Stationary Batteries save 30 to 40% floor space. This means much greater power in a lot less space—you can actually increase your battery room capacity without increasing the room size!

**All new design assures top performance.** New Silicone O-Ring post seal expands under compression, prevents escape of electrolyte. New stronger posts assure full current-carrying capacity with maximum voltage at all times. Improved element suspension eliminates possible cover breakage due to weight of battery element.

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Gould Stationary Batteries in Plastrite Jars are available in Planté, Calcium, or Kathanode. Write for details today, or call your local Gould office listed under "Batteries—Industrial" in the Yellow Pages. Gould-National Batteries, Inc., Trenton 7, N. J. In Canada, write to Gould-National Batteries of Canada, Ltd., 1819 Yonge Street, Toronto, Ont.

*More Power to you from* **GOULD**

# IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

**New bills in Congress include ones to curtail or repeal excise taxes, raise the minimum wage. FCC authorizes Bell System to experiment in space communications for one year. Eisenhower budget message and final address examined for their good counsel. Three-year test of pay-TV approved.**

FOLLOWING the usual pattern, the first two weeks of the 87th Congress saw a steady avalanche of bills on every topic under the sun. Over 3,000 bills had been put in the hopper of the House of Representatives alone by the last day of the Eisenhower administration.

A good many of these were "retreads" or repeaters—bills which were introduced in the last Congress but failed to get final action. A good many are so-called "prestige bills," meaning bills with a popular objective (such as tax reductions), introduced by individual Congressmen largely for publicity purposes. If by chance the legislative lightning should strike and Congress decide to enact any of such proposals into law, the Congressman is in a position of pointing with pride to his bill on the same subject and telling his constituents that he had introduced such a bill. This is an old, old story in Washington.

Among the multiple bills of interest to the telephone industry were some three dozen (by an early count) of bills to repeal or curtail the 10 per cent excise tax on telephone service and passenger transportation (plane, train, bus, etc.) A pretty good-sized bunch of bills to increase the minimum hourly wage showed up early from the pro-labor Congressmen. Most of these would boost the minimum from $1.00 to $1.25, although several conservatives tried to hold the increase down to $1.10, while one Congressman, playing way out in left field, wanted to boost the minimum ante as high as $1.50.

There is not much use in going into any of the separate items in the Eisenhower budget because they are all going to be changed pretty much by the new Congress. On the whole, the appropriations proposed for the various agencies, commissions, etc., follow closely the corresponding figures for the current fiscal (1961) year.

For example, the REA appropriations proposed in the REA budget would include 115 million dollars for new rural electrification loans (as against 110 million dollars last year). For rural telephone loans the Eisenhower budget suggests new lending authority—around 100 million dollars—in contrast to 80 million dollars for the previous year's budget.

However, the proposed budget would double the so-called contingency fund for both REA programs. That would amount to 60 million dollars each (telephone and rural electrification), as against 30 million dollars in the previous budget. But again we must keep in mind that the new Congress is going to revise these figures before they are enacted and probably boost them substantially.

President Eisenhower's final budget message also made some recommendations on the subject of reorganizing regulatory commissions—a popular target these days for the Kennedy-Johnson "task force" reports. The Eisenhower administration budget called for the creation of a cabinet-level Transportation Department and gradual curtailment of air-line, airport, and merchant shipping subsidies. On the subject of natural resources, Eisenhower would consolidate water resources functions of the Army, Interior, and the Federal Power Commission. He would establish regional water resources planning commissions and authorize the Fryingpan-Arkansas project.

### *FCC OKs Bell Satellite Test*

The FCC has authorized the Bell Telephone System to conduct a one-year experiment in space communications, involving the launching of an earth satellite. The FCC authorization will permit the American Telephone & Telegraph Co. to take a first step in its plan for a world-wide telephone and television system based on a network of about 50 satellites.

A spokesman for AT&T said that plans are being worked out with the National Aeronautics & Space Administration for launching of a satellite as soon as possible. "We have only a year to conduct the tests," he said, "so we will want to get underway as soon as possible." The AT&T plan involves transmission of voice and TV signals from its space laboratory at Holmdel, N. J., to the satellite for relay to other earth stations in England, France, and West Germany.

The long-term plan is to provide space communication facilities between the United States and all major nations of the world. The cost of providing the basic facilities has been estimated at 170 million dollars. The cost of launching a single satellite of the size and weight necessary for the proposed serv-

ice has been estimated at about 3 million dollars.

### *Hardy Perennials*

It was off with the old and on with the new in the nation's capital last week. Records are made to be broken. So it is not surprising that in a nation of dynamic growth, such as our own, triggered by a complete overturn of White House control after eight years of Eisenhower, the enthusiastic inaugural show broke many previous records. There were more people, more bands, more receptions, and, of course, more headaches, in more ways than one, after the various balls were over. Just for variety there was also a snow storm to make it a white inaugural.

In the flush of acclaim for the new President, we should not forget to take some note not only of what the Eisenhower administration did, or did not do, but also what it tried to do. Ike's last Budget Message to Congress was in the nature of a valedictory, and once more extended his string of balanced budgets by proposing one which would yield a 1.5-billion-dollar surplus for fiscal 1962, if Congress carries it out. But Congress will not carry it beyond the waste basket. Ike's proposed surplus is predicated upon a number of economies and other features, such as a postal rate increase, which the Democrats have not the slightest intention of enacting. And so the incoming administration will make short work of the balanced budget idea, in its haste to get the various new government aid and spend-lend programs off to an early start.

For the telephone industry there is, however, some food for thought in a number of items which Ike has proposed, not once, but repeatedly, only to be turned down by his political opposition in Congress. Among these hardy perennials were the following culled from his budget message and report:

(1) Provide an equitable tax on cooperative income, now exempt.
(2) Remove the interest rate ceiling on Treasury bonds as a brake on inflation.
(3) Authorize the sale of the Alaskan communications (telephone, telegraph) system.
(4) Increase postage rates.
(5) Raise the highway fuel tax to support federal road building program.
(6) Increase the interest rates on REA loans for rural electrification and rural telephone service from the present subnormal and subsidized rate of 2 per cent.
(7) Last (this item has always been last in Ike's budget messages) but not least, authorize the President to make an item-by-item veto in all appropriation bills instead of the present irresponsible practice of making him swallow a whole package of good, bad, and indifferent items or take the responsibility of making essential government programs go without funds if he vetoes an entire bill.

It is perhaps in the spirit of our free-spending times that when the President got to this last item in January, 1960 (he sent his 1961 message to be read to the Congress), the joint session of the 86th Congress burst into laughter. Eisenhower looked about him startled and then rather ruefully joined in —knowing that it was impossible to impose fiscal restrictions on a Congress which was determined to have none of it.

We now have a new President with new fiscal ideas of his own. But it will be interesting to see, a year from now, just how many of the Eisenhower "hardy perennials" Kennedy will adopt as his own. It would not surprise this writer if J.F.K. did decide after a year of spending and lending that there is much merit to the old-fashioned ideas of pulling the purse strings of the nation closer.

### *Ike's Swan Song*

In the afterglow of acclamation over President Kennedy's inaugural address, due note should be taken of the excellent final address which the outgoing President gave the nation, via television, on Jan. 17. It contains many solid lessons and much sound advice for all of us— and especially for the new President and his administration. It was not a lofty rhetorical effort, in the tradition of Washington's farewell address. It did not brag or pontificate. On the contrary, the predominant tone was that of a Dutch uncle telling us what has to be done and why.

Ike's last speech to the people as their President was in a serious mood. It asked for and received an acceptance from his listeners, including the new administrators, in the same spirit. None will deny the dedication of this public servant in both war and peace.

To the businessman, and others, especially interested in the soundness of the United States' economy, there was much to remember and even make note of for the troubled days ahead. It was our Dutch Uncle Ike talking to us as he never will again as our national leader. He pointed out that this nation, for the first time in its history, which will in a few years approach the two-century mark, must maintain a collossal permanent peace-time armed force and arms industry as a matter of simple self-preservation.

This means a permanent military and industrial organization capable, by its very size and influence, of determining our economy and government. We must constantly guard against this, says Ike. There is no early end in sight. And Ike yielded to no one else in his frank disappointment that he had to go out of office without any justifiable promise of any different situation. How keenly he would have wished otherwise, we can only guess.

Ike also warned us against flashy stuff in our coming international contest. He implied, without saying, that we cannot press all the panic buttons when our enemies make a scare—such as the first sputnik. Nor can we, on the contrary, think we have it made if, by good luck, our side should happen to score first in some area of international or interspatial achievement. He warned against "a recurring temptation to feel that some spectacular and costly action could become the miraculous solution to all current difficulties."

Most eloquent and persuasive was his appeal to common sense and good balance of all factors in the future conduct of our affairs. He declared that:

". . . each proposal must be weighed in the light of a broader consideration: the need to maintain balance in and among national programs—balance between the private and the public economy, balance between cost and hoped-for advantage; balance between the clearly necessary and the comfortably desirable; balance between our essential requirements as a nation and the duties imposed by the nation on the individual; balance between actions of the moment and the national welfare of the future."

Who can quarrel with any of this? Certainly not our new President Kennedy, who has been saying the same thing in different words repeatedly. These are simply the counsels of good judgment based on experience which command the approval and acceptance of all thinking men.

We read between the lines, however, a nagging doubt of Eisenhower that somehow President Kennedy may not always take to heart these homely counsels of good sense. Ike's oblique reference to fiscal responsibility as being the essential foundation of our nation's credit, without which all our other hopes and aspirations might flounder, raises questions which only the new President and his administration can answer in the months immediately ahead.

What is the "balance between the clearly necessary and the comfortably desirable"? Here, on a point of definition, opinions are likely to differ between the two administrations. We stand too close to the recently closed chapter of the Eisenhower administration to venture any historical judgment of its virtues or shortcomings, as such.

*(Continued on page 52)*

# Floridians Told Threats to Business

***Federal control, confiscatory income taxes, dictatorial unions and inflationary federal fiscal policy listed by Florida State University dean***

**By R. C. RENO**

THE CHARTING of long-range planning by business, including the telephone industry, is hazardous, because it must be made through technical, political, social and economic forces not clearly visible at the present time, Charles A. Rovetta, dean of the school of business of Florida State University told the convention of the Florida Telephone Association, held last month in Jacksonville.

Aside from the technical aspects, Dean Rovetta listed the socio-economic and political forces which impinge upon the present and future operation of business, as follows:

(1) Federal control and regulation.
(2) Confiscatory federal income taxes.
(3) Dictatorial big unions.
(4) Inflationary federal fiscal policies.

"The American system of free enterprise, individual initiative, and profit incentive, whch has given the citizens of the United States the highest level of living and the greatest degree of freedom in all human history has been under challenge," Dean Rovetta said.

Discussing the increasing federal control of business, Dean Rovetta stated:

"A free industry can support an indulgent, extravagant, free-giving government, provided the incentive of industry to produce is not destroyed. But, unfortunately, socialized government is not satisfied with sharing in the fruits of industry; in its impatience, it wants the total fruits and thus destroys incentive to produce. Before long the benefits of the social state are reduced and jeopardized because of the inevitable decline of production through a socialized industry. The American people are accepting somewhat greater social walfare activity on the part of the federal government. There is no evidence, however, that people want a socialized industry.

"Competition provides the basis for a productive society for free men. The blueprint of capitalism is the free market. Prices are the coordinator guiding man's efforts. Every person participates in setting prices in a free market. And prices so set by freedom of choice allocate efforts of production into channels as needed. No socialized government controlling a socialized industry has ever done the job so well."

Equally important to the federal control aspect, under present conditions our people are voting their economic dollars automatically and without conscious knowledge. This is especially true in taxation.

"There is developing in the federal scene a compulsion to spend, as if

**Officers and directors of the Florida Telephone Association. Seated, left to right, J. K. Galloway of Winter Park; E. L. Cox of Perry; E. D. Wilkinson of Tallahassee, second vice president; Josephine Poppleton of Tampa, secretary-treasurer; J. B. Renwick of Tampa, president; E. M. Menendez of Tallahassee; W. E. Quattlebaum Jr. of Bonifay, and C. D. Brorein Jr. of Tampa. Standing left to right, J. N. Johnson of Fort Meyers; H. D. Ledbetter (guest); H. C. Macfarland of Tampa, association attorney; M. N. Drew of Quincy; R. W. Shriner of Tampa; F. S. McGehee of Marianna; J.. L. Sharit of Port St. Joe; C. D. Brorein of Tampa; Max Wettstein of Ocala; J. P. Evans of Jacksonville; D. W. Shearer of Fort Meyers, and Otto Wettstein III of Live Oak. Not present when photo was taken: H. A. Bishop Jr. of Starke; B. A. Galloway of Winter Park, first vice president; Ralph Maner of Tampa, and C. J. Yates of Jacksonville.**

spending *per se*, would solve the problems confronting America. The coming Congress may well go down in history as one of spend, subsidize, tax and borrow. If a free spending atmosphere materializes at the federal level, the consequences on the states and communities in their quest for needed revenue will be catastrophic," Dean Rovetta told the convention.

Concerning the operations and philosophy of unions, Dean Rovetta said:

"But the dominant hazard on the American scene is the big union. The American economy can assure workers of reasonable wage increases geared to productivity. It cannot survive irresistible wage demands, limitless fringe benefits, feather bedding, planned harrassment, lawless destruction of facilities, continued work interruptions, usurpation of management responsibility, and a disregard of customer interests."

He listed four subtle changes that should be noted in the union movement:

(1) Unions are big and they control not just millions, but billions of dollars of our national wealth.

(2) The shift in unions from collective bargaining with management to political action and bargaining as a primary means of obtaining union objectives.

(3) The general shift in power and control from union members to the officers. As members of large unions lose their control, the officials have increasingly been able to pursue their own ambitions, and for the first time, Americans are accepting the subtle elements of labor dictatorship.

(4) The investment by management of large amounts in capital goods, facilities and equipment has changed the balance of power heavily in favor of unions. In a strike situation, a few workers can shut down a plant incurring enormous loses to management.

Discussing the inflationary federal fiscal policies, Dean Rovetta said:

"The basis of inflation is not an increase in prices but a decline in the value of the monetary unit, a depreciation of the dollar, which is reflected in a general price increase. The value of the dollar at a given point in time, its purchasing power, its economic power—lies in the quantity of goods or services which it will buy at a given moment. . . . It is well to recall that the vital feature of Lenin's plan to destroy capitalism by inflation was that the transfer of wealth from citizens to government must be secret and unobserved. Inflation provides such means."

The Florida convention was presided over by President E. M. Menendez of Tallahassee and it was opened by two speakers discussing the subject "Planning for Management." They were M. N. Drew, president of the Quincy (Fla.) Telephone Co., and J. K. Galloway, president of the Winter Park (Fla.) Telephone Co.

**President-elect John B. Renwick of the Florida Telephone Association receiving the association plaque from retiring president, E. M. Menendez.**

Mr. Drew related his experience in attending the USITA Management Development Program at the University of Kansas last summer. He outlined the courses covered in the program and recommended that telephone companies consider sending present management personnel and prospective candidates to next summer's University of Kansas course.

Discussing the advantages of such courses, Mr. Drew said:

"Management is an important facet in every business. The telephone business is certainly no exception to this, and while this is painfully self-evident most of the time, management on all levels seems to elude the attention that should be given to it.

"In the not too distant past, and certainly within the memory of everyone in this room, management in telephony has been many things. It was splice that cable, install that telephone, replace that drop, sell that directory advertising, and cut your salary when you had a short month. It was a 'I wonder how my business is doing so far this year. I have some money in the bank, so I must be making a profit' type of venture. It was management, in fact, consisting of economist, accountant, trouble shooter, engineer, toll settlement negotiator, labor relations advisor and father confessor rolled into one package. This package proved to be most inadequate, most of the time—nor was it limited to the smallest companies.

"Most of our larger companies have, in the recent past, begun to do more and more planning for management and so must the smaller companies."

J. K. Galloway, president of The Winter Park Telephone Co., spoke to the convention on "Planning for Management." He underscored the value of the USITA Management Program at the University of Kansas as most desirable, but added that it is only one of the ways that a company can make plans for its management.

"Management," Mr. Galloway said, "is made up of a lot of things, some of which I will outline for you, but, basically, good management is the accomplishing of a planned objective through the use of other people. By improving your management ability, *you* can run your business; and not have your business run *you*. You can make more money and enjoy it."

Then, Mr. Galloway outlined a six-point program for management as follows:

(1) **"Organize**—Remember that you are organizing people, and in order to get people to do what you want them to do, you must tell them. If you have a hazy idea of what you want to accomplish, you can hardly tell your people what to do. In organizing people, you must tell them clearly what their duties are and authorize them to exercise the authority necessary for them to complete the assignment. You should have a company organization plan showing who reports to whom and also showing the line of authority.

(2) **"Plan**—Plan your company objectives. We have, as a first objective of the company, to offer the public the most modern and efficient telephone service possible commensurate with sound financial principles.

(3) **"Train**—Training is accomplished by creating a desire in your people to *learn*—learn *more* so that they can accept more responsibility; and *act with more authority* so that we can pay them more money. Generally, people are anxious to learn. What they need is the opportunity. Another tool of management is employe evaluation. All of our people want to know *how* they are doing. You will find that an organized plan for regular evaluation of your people will greatly improve your whole organization.

(4) **"Communicate** — Communications means keeping our people informed of what is going on in the company—of company problems, company solutions, and company objectives. Through good communications, our peo-

*(Continued on page 50)*

# Rex

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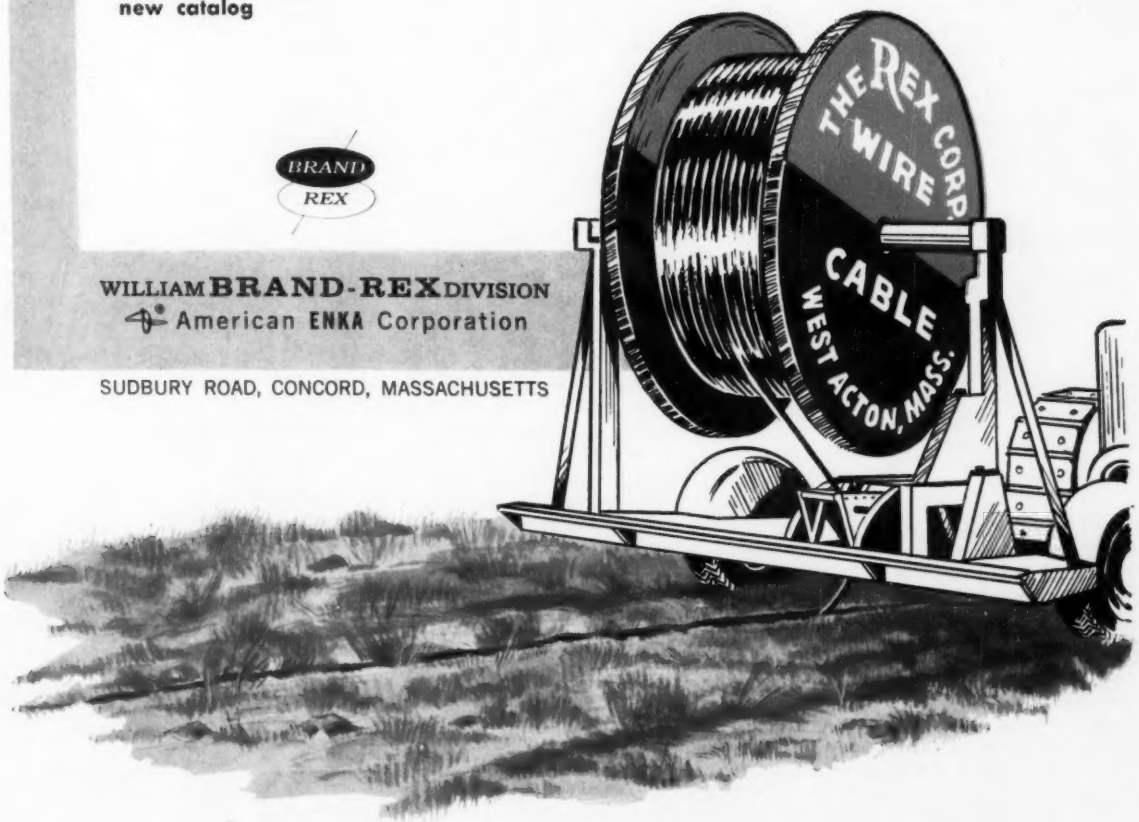


# AT&T Announces TELPAK, New Point-to-Point Service

AMERICAN Telephone & Telegraph Co. on Jan. 16, proposed a new service which would create broad "electronic highways" between specific points, over which all types of communication could be transmitted. The offering was made in a filing with the Federal Communications Commission.

Called TELPAK, the new Bell System service will provide interstate communications channels of various widths for transmitting different forms of communication — telephone, telephotograph, teletypewriter, control, signaling, facsimile, metering and data. The service is designed to serve customers such as businesses and government agencies needing a large volume of point-to-point communication. The customer will have use of his TELPAK channels on a full-time basis.

TELPAK actually is a new form of private line service, AT&T states. The customer selects the size of the TELPAK channel best suited to his particular needs. The telephone company will either terminate the broadband channel at the customers' premises or will subdivide the channel into lesser bandwidths necessary to carry out the specific functions requested, such as telephone, teletypewriter, etc.

Initially, there will be four sizes of TELPAK channels:

TELPAK A—Equivalent in capacity to 12 voice circuits.

TELPAK B—Equivalent in capacity to 24 voice circuits.

TELPAK C—Equivalent in capacity to 60 voice circuits.

TELPAK D—Equivalent in capacity to 24 voice circuits.

These classifications, according to AT&T, will provide a range of channels which offer wide flexibility in meeting customers' needs and/or consistent with the characteristics of newer types of transmission systems. It is felt that a family of channel terminals, including channelizing equipment, suitable for voice and non-voice transmission will accommodate existing customer service needs.

To illustrate the flexibility of the new service, a TELPAK channel may be arranged to provide 11 voice channels and 12 teletypewriter channels, or six voice channels and 72 teletypewriter channels, etc. Or, the telephone company can terminate the entire TELPAK channel for use as a broadband transmission medium, such as is required for high speed data or facsimile transmission. Also, terminals and channelizing equipment can be changed to meet the customers' needs, AT&T explained.

There are two charges involved in TELPAK, a monthly rate for the basic transmission path and different monthly rates for the various channel terminals.

The rates specified in the FCC filing are: TELPAK A is $15 per airline mile per month; TELPAK B is $20; TELPAK C is $25 and TELPAK D $45 per airline mile per month. Charges for channel terminals, including channelizing equipment, will vary with the type of terminal needed. As the customer's requirements increase, he may simply order additional channel terminations up to the capacity of the broadband channel.

As intrastate offerings—similar to the TELPAK interstate service—become available, it is planned that a customer will be able to use his TELPAK channel for both interstate and intrastate services.

TELPAK provides customers with the features of a privately-owned microwave radio system, but offers many advantages over microwave. The advantages are: (1) The cost is competitive; (2) maintenance of equipment is part of the service; (3) alternate circuits are available in emergencies; (4) no capital investment is required; (5) customers can readily change or add new locations; and (6) there are no losses from obsolescence.

The telephone industry is faced with increasing competition from private microwave systems. Such systems have mushroomed—a sizable 23 per cent annual increase—in the last 10 years. This in spite of the fact that, until recently, FCC frequency allocations limited those companies eligible to build their own microwave systems to a comparatively small group.

However, last year the FCC changed the frequency allocations which resulted in opening the way for almost unrestricted eligibility for private microwave systems. This means that the telephone industry can expect almost unlimited competition.

Although the initial market for TELPAK is estimated at 1,000 customers, AT&T states that indications point to a market of "tremendous proportions—one that the telephone industry cannot lose or afford to ignore."

## Cal. Company Gives Ike "Yankee Doodle Telephone"

A "Yankee Doodle telephone" for former President Eisenhower is an idea that came to J. C. Newman, president of the Coachella Valley Telephone Co., Indio, Cal., and his associates. They put the idea into action by assembling and presenting what Mr. Eisenhower described as "the handsome red, white and blue telephone set."

No, the general public hasn't seen one, and it's likely that President Eisenhower has the first and only such telephone ever put together.

On the occasion of a visit by President Eisenhower and his party to the desert area, Mr. Newman thought of a unique gift. Down from the shelves came a white type 80 Automatic Electric Co. telephone, and with the assistance of Eldon Burgess, commercial manager, and John Hickey, wire chief of the Coachella company, the work of improvising the "patriotic" telephone was begun.

The dial was removed and replaced by one from a red telephone. A blue telephone was then brought in, and the handset was attached to the colorful new assembly.

President Eisenhower was pleased with the gift, and sent Mr. Newman a letter of thanks for "the handsome, red, white and blue telephone set you so kindly wanted me to have."

He added: "At the same time, may I express the warm thanks that all the members of my party feel, including myself, for the fine cooperation you have given to us in the matter of telephone service during our various trips to the desert area.

"I know that, particularly on the last trip, you had very little advance notice, and the miracle is that you were able to have communications established by the time I reached El Dorado."

## Look at Railroads' Future

"I am firmly convinced that unless we free them [railroads] from archaic restrictions and regulations that no longer apply under today's conditions and unless we modernize all our operations to provide better service at attractive fares we will follow the path of the British, and, despite all our good intentions, and devotion to private enterprise, we will find ourselves with a nationalized transportation system." —S. H. BINGHAM, *former director and general manager, New York City Transit Authority.*

## OVER-THE-HORIZON ENGINEERING ADVANCES

Up until the past few years, it was widely assumed that the transmission of radio in the VHF range and beyond was more or less limited to line-of-sight, the optical horizon. However, experimental projects being conducted by Bell Laboratories, Massachusetts Institute of Technology, National Bureau of Standards, and other large laboratories and organizations have proven that the transmission of these frequencies many times this distance is possible.

During the time this type of transmission was not fully understood, some systems based upon the earlier experimental knowledge were engineered and installed for military and commercial applications.

Now, Kenneth Bullington of the Bell Telephone Laboratories has advanced a fuller explanation of long distance radio transmission. It was reported that Mr. Bullington disclosed the information at a recent joint meeting of the Institute of Radio Engineers and the International Scientific Radio Union (URSI), held at the National Bureau of Standards, Boulder, Colo.

Many of the theories which have been advanced to explain much of the experimental data, have assumed that transmission is possible by scattering due to irregularities in the atmosphere, and that the effects of gradual decreases in atmospheric pressures with height can be neglected.

Mr. Bullington stated: "The present concept postulates that long-range transmission is a logical consequence of the average decrease in the index of refraction of the atmosphere with height above the earth. In effect, the theory is based on coherent reflections from a dielectric gradient. The irregularities in the atmosphere cause fading, but do not add significantly to the average signal."

It was stated that this concept was considered earlier, but that it was cast aside because the mathematical approximations at that time available indicated that the effects were too small. The results indicate that the most important effect was neglected.

Mr. Bullington said, "The simple concept not only offers a good quantitative explanation but also ties together more diverse experimental data than had been attempted in previous theories."

## OPTICAL MASER RESEARCH

IN A PREVIOUS installment of this section (TELEPHONY, Oct. 29, 1960), consideration was given to a recent development of Bell Laboratories, known as a ruby optical maser. The ruby optical maser was described as a device which would generate pulses of coherent light waves, possibly useful for communication purposes.

Further significant advances — permitting continuous generation of coherent light waves — have recently been announced by officials of International Business Machines Corp.

It was reported that IBM scientists Dr. Peter P. Sorokin and Dr. Mirek J. Stevenson have developed a new approach to the generation of coherent light waves in the visible and infrared allocations of the spectrum.

"Coherent" light waves are produced by synchronous and cooperative (in phase) oscillations of ions, introduced into a crystal. The resulting light waves have a sharply defined frequency and propagate in an intense, highly directional beam.

Trivalent uranium ions (so-called because three electrons are removed from the uranium atom's outer shell) are the key to the new infrared device; "divalent" samarium ions (two electrons are missing from the shell of the samarium atom) are the key to the visible red light maser. Both use a "host lattice" of calcium fluoride, in which one-tenth of one per cent of the calcium ions are replaced by uranium or samarium ions.

It was reported that the newly developed IBM masers operate on about 1/500th the power required by the ruby optical maser.

The sharpness of the beam angle, approximately one-half degree with the first masers, may be reduced

*A close-up of the recently developed trivalent uranium maser through a window in the lower portion of a liquid helium dewar. Coherent light waves emitted by the optical maser have a sharply defined frequency and propagate an intense, highly directive beam. (IBM photo.)*

several orders in magnitude by improvement of optical design. So sharp would such a beam angle be that over a distance of 100,000 miles the light waves would focus on less than a one-mile-diameter surface, compared to a microwave transmitter which would scatter its radio waves over a 10,000-mile-diameter area.

Communication by light waves is certain to open up a whole new avenue in the electromagnetic spectrum. Use of these portions of the spectrum for communications will greatly increase the number of channels for transmission of information.

Dr. Arthur L. Schawlow, Bell Telephone Laboratories, and Professor Charles H. Townes originally advanced the concept of optical masers in 1958. A paper, "Stimulated Infrared Emission From Trivalent Uranium," by Dr. Sorokin and Dr. Stevenson appeared in the December 15, 1960 issue of the *Physical Review Letters*, a publication of the American Physical Society. Another paper, "Solid State Optical Maser Using Divalent Samarium in Calcium Fluoride," will appear in the January issue of the *IBM Journal Of Research And Development*. This article will also be presented by the two IBM scientists.

## EARTH-SPACE RESEARCH

INTERNATIONAL Telephone & Telegraph's Federal Laboratories has been issued what has been reported to be this country's first license allocating radio frequencies to private industry to operate an experimental research facility for investigation of earth-space communications.

The authority grants ITT Federal Laboratories, Nutley, N. J. approval to operate a recently developed space research communication station, for one year subject to renewal. The operation will be on frequencies in the 2000-megacycle band. The aim will be to bounce signals off the moon and passive satellites, and to do basic research and study of space communication theory.

The research station, with call letters KFQXBR, is located some 8 miles from downtown Manhattan and consists of a 40-foot parabolic antenna, a building, in which is installed a 10-kilowatt transmitter, and sensitive receiving equipment.

It is reported that the receiving equipment will utilize ITT's recently developed parametric amplifier, which is said to virtually eliminate self-generated noise interference and enables the reception of signals previously undetectable.

It was further stated that the antenna is designed so as to be able to pivot freely in order that it can sweep horizon to horizon under automatic orbit program control when tracing approaching man-made satellites and celestial bodies.

The experiments are certain to yield data of considerable value to organizations interested in satellite communications systems as a medium of relay for telephone, television, and other forms of transmitted intelligence.

In the matter of frequency selection, it was reported that the FCC, in a letter to ITT, had stated, "The commission wishes to stress that no determinations have been made either nationally or internationally as to what portion or portions of radio spectrum ultimately may become available for use by operational space communications systems."

The U. S. Air Force will be provided with an advanced satellite communication test range for transmission of messages via passive orbiting satellites of the "Echo" type. The program to provide the system has been awarded to Page Communications Engineers, Inc., a Northrop Corp. subsidiary. The announcement of the contract was made by Esterly C. Page, president of the Washington firm.

The satellite system will be utilized to permit voice and teletype communications, through space, some 2000 miles from Floyd, New York to Trinidad, British West Indies.

It was explained that the performance achieved through the operation of the system will supplement data obtained by the National Aeronautics & Space Administration. The information obtained will also be used to provide criteria for the future development of a full-scale operational communication system for the military.

While many of the considerations of the new satellite system cannot be disclosed at this time, it was reported the initial design provides for a parametric amplifier having a 1.25 decibel noise figure, which will enable the system to operate for all positions of satellites having geometric bounds of mutual visibility.

It was also explained that the satellite system must operate with a high-powered tracking radar. In this respect, the two systems will share the same antenna.

## DATA PROCESSING

A MAJOR breakthrough in the data processing field, was announced recently by the Remington Rand Univac Division of Sperry Rand Corp. with the development of a thin magnetic film computer memory.

"The Univac breakthrough now makes possible a whole new generation of computers that operate in nanoseconds, billionths instead of

*Dr. S. M. Rubens, director of physical research, Remington Rand Univac, holds a substrate of Thin-Film, which increases the operating speed of computers.*

millionths of a second," declared Dause L. Bibby, president of Remington Rand.

The newly developed thin film computer memory is said to consist of a series of metal dots on a suitable substrate, such as a thin glass plate. The dots, a few millionths of an inch thick, are made through depositing vapors of ferromagnetic materials such as iron, nickel, and cobalt.

Univac at the same time announced the development of its type 1107 Thin Film Memory Computer, the first computer to employ the new device. Applications will include scientific communications, data and reduction analysis, digital communications and switching systems, inventory and scheduling.

## COMMUNICATION LINKS

A CONTRACT to fabricate an over-the-horizon communications link for the U. S. Army has recently been awarded to International Telephone & Telegraph Corp.

The proposed network will be used to link U. S. Army Signal Corps installations in the metropolitan area of New York with those in Galeville and Bullville, N. Y., it was explained.

It was announced that the longest leg of the newly proposed link would be that span from Fort Wadsworth, Staten Island, to Galeville, some 55 miles in length. In addition to the Fort Wadsworth-to-Galeville hop, it was reported that the system will include a 9-mile spur from Galeville to Bullville.

The system will be built for the Army by the Triborough Bridge and Tunnel Authority to replace facilities located at Fort Wadsworth within the right-of-way of the Authority's Verrazano-Narrows Bridge project, now under construction.

It was reported that: "The system is designed to handle 12 voice channels, with room for expansion to 24 channels."

## ELECTRONICS BOOK

TUBES AND CIRCUITS

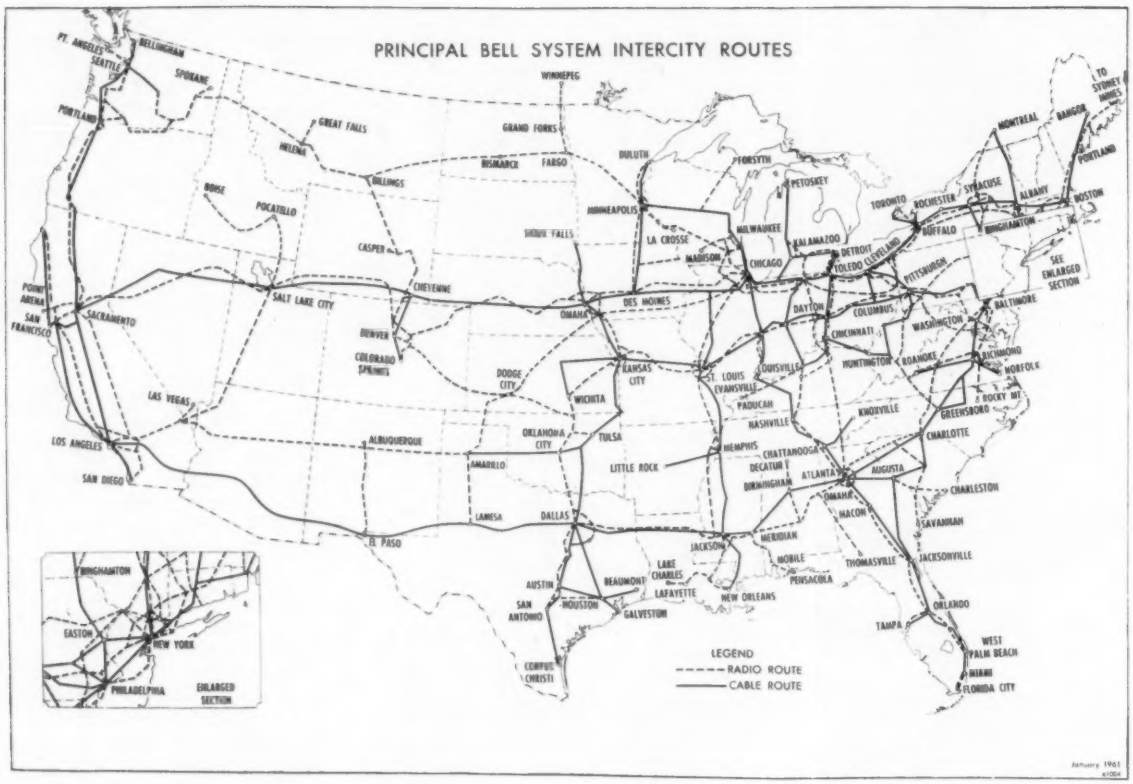
192 pages; price: paper cover, $3.45; cloth-bound, $5.00

In order that the electronics technician may efficiently perform the task of maintaining complex electronic apparatus containing electron tubes, an understanding of how electron tubes function in a particular circuit is a must.

It is true that practicing technicians, through long experience may be able to locate the troubles that occur quite frequently. However, the tough-dog, that case of trouble that may cause distortion may not be as easily detected; that is, not unless the technician has the knowledge of circuit theory and operation.

On the assumption that the technician would like to improve his knowledge of electron tubes and circuits, this book is recommended.

The reader is given the introduction to basic characteristics of electronic tubes only after a detailed study of basic electronics; that is, how the electron behaves under the influence of heat, and electric and magnetic fields. The following chapters cover topics such as vacuum diode application, vacuum tube amplifiers and oscillators, multi-purpose tubes, gas tubes, photoelectric emission, and industrial applications.




## CHANGES IN WWV/WWVH STANDARD BROADCASTS

THE National Bureau of Standards recently announced it had retarded the time signals being broadcast from radio stations WWV and WWVH by 5 milliseconds on Jan. 1, 1961, at 0000 UT (Universal Time). At the same time, broadcasting was resumed on WWV with a special timing code. The code gives the day, hour, minute, and second (UT) coded in binary form.

The time retardation was necessary to bring the time signals of WWV/WWVH more in line with other standardized frequency broadcasting stations. The binary form of signal was utilized during several months of the past year, and has now been returned to the air on a permanent status.

In order that many of the scientific and technical problems—such as those that might be created by tracking of space vehicles and artificial satellites—may be resolved, the United Kingdom and the United States began coordinating their time and frequency standards in early 1960. It is expected that time signal adjustments will be made as infrequently as possible, and if possible at the beginning of each calendar year.

The time code is 36-bit, 100-pulse-per-second time code, carried on 1000 c/s modulation and is being broadcast 2.5, 5, 10, 15, 20, and 25MC/s.

Additional technical information may be obtained by reviewing NBS (National Bureau of Standards) Miscellaneous Publication 236, available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price $1.25.

## MEASUREMENT CONFERENCES

A SERIES of meetings destined to bring into sharp focus the impact of the so-called measurement pinch as it affects certain industry has been held at the National Bureau of Standards (NBS) during the past several months. It has been reported that Measurement Research Conferences, sponsored by Areospace Industries Association (AIA), are a followup to the AIA Industry Calibration Survey, which identified many of the areas in which the industry faced measurement problems. As of the end of January 1961, nine such meetings will have been held, so reports NBS.

Early meetings dealt with the measurements of microwave power and attenuation. As an example of the needs in this area, it was announced that an industry representative pointed out a case in which a million-dollar development of radomes had to proceed on a more or less trial-and-error basis, because precision measuring equipment for determining phase and amplitude changes was not available in the required frequency range.

Another representative brought out how certain klystron tubes were over-designed in order to insure that the tubes would do the job. Here, techniques for measuring peak power, if satisfactory, would have resulted in substantial savings.

## AIEE WINTER GENERAL MEETING

THE AIEE Winter General Meeting is being held Jan. 29-Feb. 3, 1961 at the Statler-Hilton and the Governor Clinton Hotels, New York, N. Y. Meeting headquarters has been designated the Statler-Hilton.

The meeting is featuring one of the largest technical programs in the history of the organization. Included in the program are inspection trips to nearby industry and laboratories.

Among the list of industry and research laboratories to be inspected are Anaconda Wire & Cable Co., Astoria generating station of Consolidated Edison Co. of New York, and Bell Telephone Laboratories.

Considerable attention again is being focused on wire communications, solid state devices, data communications and electronic switching.

Certain papers which are thought to be of interest to readers of TELEPHONY will be obtained by the Electronics Editor and discussed in these columns.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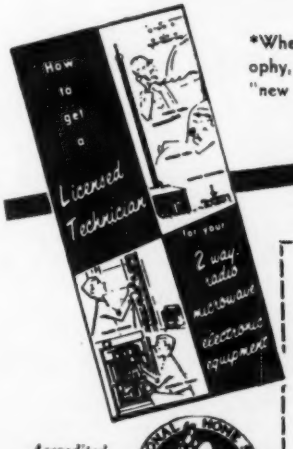


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# Public Elections in An Electronic World

*By Ralph M. Goldman*

THE 1960 presidential election outcome, its razor-thin margins, and its inaccuracies and slowness of vote count once again call attention to the antiquated technology of our voting procedures. Contemporary voting machines and paper ballots are about as out-of-date today as the small pellets dropped into the urns of ancient Rome. Yet, the American election system has available — or imminently available — the equipment for allowing each citizen to vote in the privacy of his home, with final returns becoming available a matter of minutes after the closing of the polls.

One proposal can be set forth rather simply by following a hypothetical Citizen Smith through several steps of the suggested process.

Our Citizen Smith registers in his home precinct or ward under a system of permanent registration. In doing so, he is given a voter code number which identifies his state, county, ward, and precinct as well as Mr. Smith himself. On election day, Mr. Smith goes to his telephone and dials this voter code number. He hears a buzz over the receiver, followed by a recorded announcement that tells him: "The Televoter is now ready to receive your ballot."

The Televoter is nothing more than an electronic computer. The Televoter simply receives the telephoned vote of eligible electors and conducts a tally for each state. In an election for President, a national electronic computer double-checks the work of the state computers.

With his telephone now tied in to the Televoter, Mr. Smith proceeds to examine a coding sheet before him. This sheet looks something like a paper ballot. It was mailed some weeks before election day to Mr. Smith and all other registered voters. On it are the names of all candidates for public office as well as the various propositions for which Mr. Smith may vote in his particular community.

Also on this sheet are code numbers that Mr. Smith must dial on his telephone in order to cast his ballot. These codes enable him to vote a straight party ticket, split his ballot, or *not* vote for certain offices. A "terminating" code number reports to the Televoter that Mr. Smith has now completed casting his ballot. At this point a recorded voice announces to Mr. Smith exactly how he has just cast his ballot, indicating candidates and propositions voted for. If Mr. Smith is satisfied, he dials another "terminating" code, and his ballot is cast irrevocably. If Mr. Smith hears an error in the play-back, he may dial a correction or cancel the vote and start dialing all over again.

Meanwhile, at the state capital, the Televoter has tallied the "civic instructions" received from Mr. Smith. Similar instructions are, of course, being received simultaneously from thousands of other citizens voting at the same moment from the privacy of their homes, public telephone booths, or official election-phone booths.

Would the existing telephone circuits and exchanges be able to handle the extra load created in a single day by 70 million or more voters, each taking from four to six minutes of circuit time? Possibly not immediately. Certainly in a very few years. The electronic switching experiment at Morris, Ill., and the developments in the Data-Phone field point the way to early solutions of relevant equipment problems.*

Until such time as a nationwide dialing and Televoter network can be perfected, networks and Televoters covering the 3,000 counties and the 50 states separately could be employed. Administrative solutions to some load problems could be worked out: election day could be extended from a 12-hour

*(Continued on page 48)*

*See A. A. Alexander and others, "Capabilities of the Telephone Network for Data Transmission," *Bell System Technical Journal* (May, 1960), on Data-Phone potentialities and the low probability of errors occurring from equipment failures, important for accuracy in election returns.

## The Author

**Dr. Goldman is Associate Professor of Political Science at Michigan State University and Director of its American Politics Graduate Training Program.**

**He is co-author of the recently published Brookings Institution study of "The Politics of National Party Conventions" and co-editor of an earlier five-volume survey of "Presidential Nominating Politics in 1952."**

**He is currently engaged in studies of trends in national party leadership and patterns of presidential election outcomes.**

**Dr. Goldman defends the touch of science fiction in this article as appropriate to an initial effort at communication between otherwise widely separated technologies and professions.**

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# THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

OUT ON OUR West Coast, telephone companies have for years experienced trouble caused by lead-eating beetles. It was hoped that the switch from lead to polyethylene as a cable covering would discourage the insatiable cable-munchers. However, it was soon learned that polyethylene agreed with the beetles even more than lead.

Various remedies have been tried, including insecticide paint on the polyethylene. Another remedy was to clear out dead trees near the line that provide a nesting place for beetles. Actually, thousands of dollars have been spent in this war against beetles. Telephone men are hoping that victory will soon be theirs, and that beetles will go back to eating whatever beetles ate before lead and polyethylene came along.

•

It is claimed that a group of the national capital's newspapermen, convinced that in the event of an enemy attack, Washington would be the first target, held a conference to decide how best to handle it from a news angle.

It didn't require very long to come to this agreement:

"The reporter on the scene shall rush to the nearest telephone, which will not be working, and notify his newspaper, which has been blasted off the map, so it can inform its readers, who will all be dead, unless they were in bomb shelters, in which case they wouldn't get the paper, anyhow!"

•

*The Ohio Bell* magazine recently carried an interesting article on telephone help for the handicapped. In addition to the electronic larynx that is manufactured at a cost of $45 and sold to customers at cost, many other telephone aids are available for the handicapped.

A special telephone adaptation for a respiratory polio victim is dial-operated by the right foot through a lever-pulley arrangement. Dial tone is received by hitting a switch with the big toe. It is reported that the patient never gets a wrong number.

Other aids include: the hands-free speakerphone for those unable to use the handset; a volume control telephone for those with hearing impairment or with weak voices (the volume can be controlled either in the receiver or the transmitter); a braille switchboard to aid the blind; school-to-home telephone systems which provide homebound school children with instructions and classroom participation; (a "listen-talk" switch and volume control on the home speaker permit recitations); and special telephone adaptations engineered for specific handicaps.

These special telephone aids for the handicapped are engineered, designed and built for the cost of the equipment only. Installations, too, are held to a minimum. Ohio Bell expresses its proud participation in helping the handicapped.

•

Bill Gold conducts a daily column, "The District Line" in the *Washington (D. C.) Post*, that lists pets which his readers wish to give away. He insists, however, that the prefix of the giver's telephone number be spelled out in full as the 2L-5N treatment results in wrong numbers and confusion.

Despite this, the masthead of the *Washington Post* lists its telephone number as RE 7-1234 and not Republic 7-1234. The day will be a happy one when all numbers are converted to ANC for everybody. If not happy, at least we shall all be using the same system.

•

Any one interested in computers—and who isn't these days—should have a book titled: "Basics of Analog Computers," authored by Thomas D. Truitt and A. E. Rogers. This 6-inch x 9-inch book of 400 pages in cloth binding can be purchased from TELEPHONY for $12.50.

Written as a companion text to the well-accepted "Basics of Digital Computers," this new three-volumes-in-one-binding training course presents in simple, clear details the concepts, devices, and applications of the analog computer.

With more than 400 illustrations to pinpoint the ideas discussed in the text, the subjects are developed in a manner easy to grasp by any one having the slightest understanding of engineering. Yet the course is complete. Beginning with the simple ideas, it steps through the basic types of analog devices, introduces the reader slowly to the mathematical concepts involved, explains in detail the working of modern general-purpose electronic analog computers, and rounds off the course by presenting practical applications of the computer.

Questions are included at the end of each section to enable the reader to test his comprehension of the subjects presented. To obtain a greater familiarity with the terminology used in analog computer technology, a glossary of terms has been included at the end of the book.

•

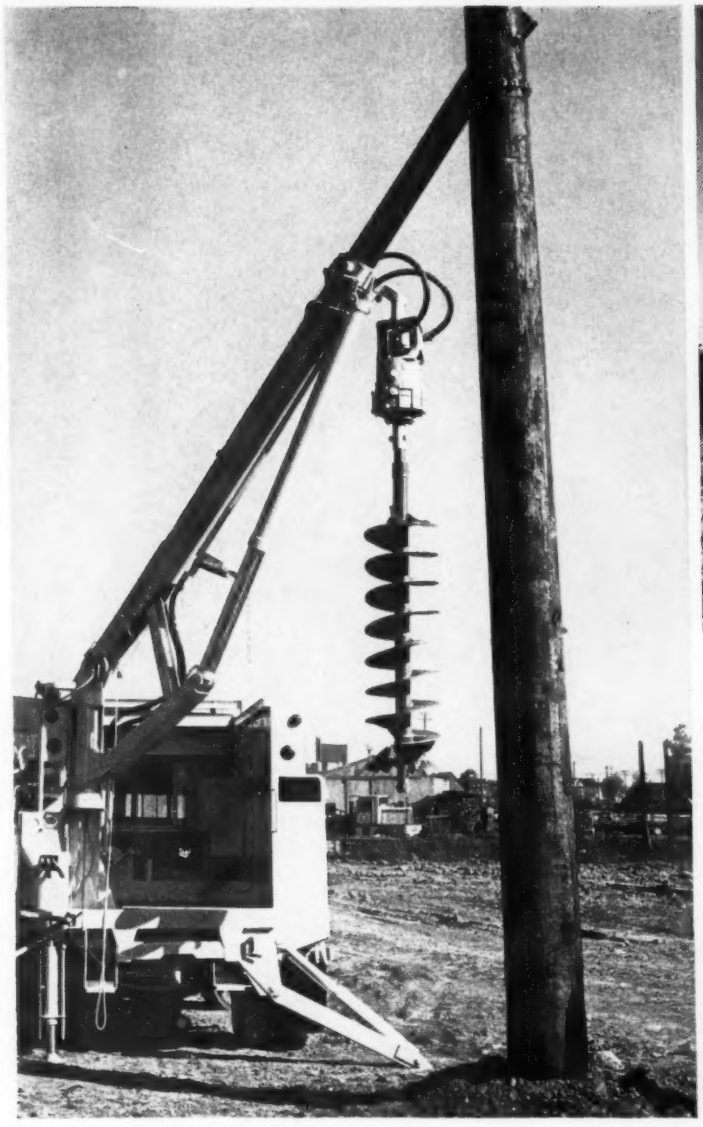
Crosstalk: Never trust a man who claims he is not afraid of his wife, for he will probably lie about other things also.

•

It is reported that about 70,000 people are hospitalized for burns each year in the United States.

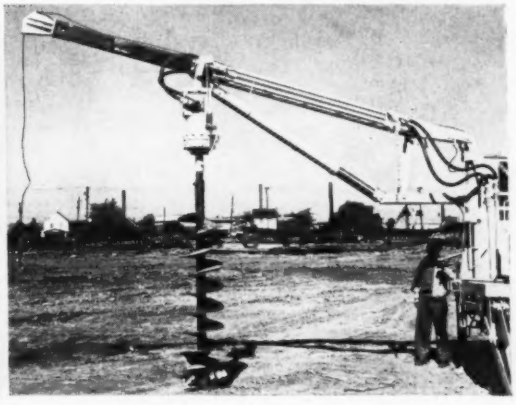
•

It is said, if a passenger was born in a commercial airliner, and flew every day from then on, he could not expect to be involved in a fatal crash until he was 76 years old.



Semi-automatic device locks borer on end of extendible boom for digging.

Borer automatically locks to end of main boom when retracted, leaving extendible boom free for pole setting.



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A semi-automatic locking device moves the earth borer onto the extendible boom for digging . . . or to its main boom storage position.

The 7500 . . . shown here mounted on the left side . . . is available mounted on the right side. It reaches up 27'-6", 18½' behind the truck, and beyond the right side 12'-3" (left-side mount) and 16'-10" (right-side mount) with boom extended.

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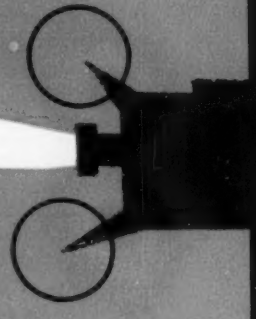

This new film shows you how to increase revenue and reduce operating costs with automatic toll ticketing. We'll be glad to show the film in your office for you and your entire staff. To make arrangements, write Automatic Electric Sales Corporation, Northlake, Illinois.

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# Courts and Commissions

## NCUC Concludes Hearings On Use of Fast Depreciation

The North Carolina Utilities Commission on Jan. 13 completed hearings on a proposal that "accelerated depreciation" be considered a part of the rate-making procedure for utilities in North Carolina (TELEPHONY, Nov. 5).

The commission now has the testimony under consideration, and its decision, which may not come for several months, could have an important effect on utility rates in North Carolina. It is estimated that up to 15 million dollars a year could be cut from rates if the "fast tax write-offs" are required.

Most North Carolina utilities use the "single line" depreciation method, under which the same amount is written off for depreciation over a period of years. The companies oppose the "accelerated depreciation" method under which larger amounts would be written off in earlier years, with most of the depreciation allowance being used up before the depreciation period is over.

The hearings were ordered by the commission on its own motion to see if utilities should be required to use the accelerated method. The NCUC has been following the policy that "any benefits derived by a utility from the acceleration of its depreciation for income tax purposes would flow through to the rate payer.

Utility company attorneys say, however, that fast tax write-offs would not save taxes, but simply defer them for a few years, and, that although rates might be reduced initially because of fast tax write-offs, they could only go higher than ever in the end. They contend that it is not fair to give present-day subscribers a break on rates, when subscribers 10 or 20 years from now may have to be charged higher rates to pay the taxes.

The companies also feel that if a company does use accelerated depreciation for rate-making purposes, the taxes should be "normalized" which would mean that the company would put any savings aside against a time when its tax bill might be increased. Also, they maintain that any benefits from fast depreciation should be divided between the customers and the investors.

The North Carolina Attorney General's office has stated that the utilities could realize substantial savings by taking advantage of accelerated depreciation, and that companies should be required to pass any savings on to rate payers.

They also contend that because companies are continually buying facilities and equipment, there would never be a day when they reached a point of having no depreciation allowance to deduct from their tax returns.

## Acquires Majority Control Of Company in Iowa

Iowa-Illinois Telephone Co., New London, Ia., has purchased a majority interest of the stock of Mt. Pleasant (Ia.) Telephone Co. and assumed management of the Mt. Pleasant company on Jan. 18.

A. W. Sanders, executive vice president of the Iowa-Illinois company, announced the transfer and stated that no changes in personnel are contemplated. Roy Brandel will continue as manager of the Mt. Pleasant exchange and will be assisted by the present staff.

The new owner plans to proceed immediately with the conversion of the telephone plant to fully automatic dial equipment and expects the improvement program to he completed within two years. A new building to house the equipment and offices will be constructed.

Iowa-Illinois Telephone Co., a subsidiary of General Waterworks Corp. of Philadelphia, Pa., together with General Waterworks' other telephone subsidiaries, owns and operates 127 telephone exchanges in the states of Iowa, Illinois, Minnesota, Missouri, North Dakota and Utah, providing telephone service to 66,762 subscribers.

## Rate Raise OK in Tex.

The Kenedy (Tex.) City Council has granted the Southwestern Bell Telephone Co. an increase in rates.

## FCC Grants AT&T One-Year Space Communication Permit

The Federal Communications Commission on Jan. 19 granted the American Telephone & Telegraph Co. frequencies in which to conduct its active space satellite communications experiment (see also *In the Nation's Capital*, this issue).

Upon obtaining the FCC approval to carry on its earth-space communications research through Jan. 1, 1962, AT&T issued the following statement:

"We are pleased with the commission's decision because we can now firm up our plans for the next step toward a space communications system. We are most anxious to have an active satellite in orbit within a year and will push vigorously toward this. To do so, we have asked the government to supply launching facilities and we have offered to pay the costs.

"Through satellites we will be able to supply the fast-growing need for international communications. Our cable and radio network carried nearly 4 million telephone calls overseas last year and calling is increasing by nearly 20 per cent every year.

"By 1980, we expect there will be 100 million calls a year; 25 times what we have today. In addition satellites will make possible the international transmission of TV and other forms of communication not feasible with today's cable and radio circuits.

"The United States now leads in the peaceful use of space technology. Project Echo—in which Bell Telephone Laboratories participated with the National Aeronautics & Space Administration — dramatically demonstrated this leadership. The granting of these frequencies is a major step toward retaining this leadership."

## Delaware Court Upholds Relocation Reimbursement

An opinion handed down by the Delaware Supreme Court, it was reported on Jan. 16, upheld the validity of a 1957 state law directing the state highway department to reimburse public utilities for the cost of relocating their facilities, when necessitated by interstate highway construction, and when the state is reimbursed for up to 90 per cent of the expense.

This ruling was given in a declaratory judgment action which had been

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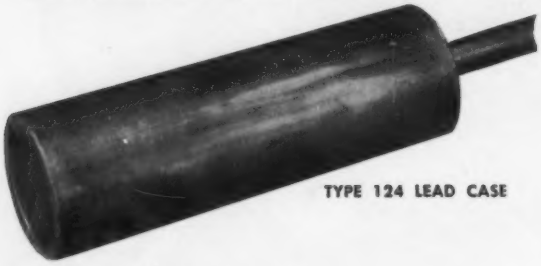

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initiated by the Delaware Highway Department. Named defendants were Delaware Power & Light Co. and the Diamond State Telephone Co.

The highway department contended the law was unconstitutional because it permitted the appropriation of public funds to a private corporation for a non-public purpose. The department further argued it was the duty of the court to determine whether a public purpose and need existed.

In an opinion written by Justice Howard W. Bramhall, the high state tribunal said that the 90-10 federal-state highway construction program "is a gigantic program, with some crash features attached. Necessarily involved, along with acquiring the land for this construction, the removal and filling of the roadbed and the construction of the road itself, is the removal and relocation of a large amount of utility facilities out of all proportion to the removal and relocation of facilities involved in the usual program of widening or straightening of roads."

The court noted that in the U.S. House and Senate reports, concern was expressed as to "the impact which the cost of payment for such relocation would have upon the smaller utilities and communities owning utilities which would very likely be unable to pay for the cost of such relocation."

The court stated further:

"We have no difficulty in concluding that the statute constitutes a valid exercise of the police power of the (Delaware) General Assembly, assuming, of course, that the appropriation made therein is for a public purpose.

"The construction, reconstruction, maintenance and repair of public highways is an inherently governmental function which belongs primarily to the state and may be exercised by it as part of its police powers in connection with the general welfare. . . .

"Certainly, highways have a very important relationship to the public welfare. We find nothing in the statute which provides for any unreasonable exercise of such power."

The court also said it had to consider the purpose for which the law was enacted:

"The general good which will likely result therefrom, and the difficulties which Congress anticipated would have to be overcome before the construction of this gigantic project shall be completed.

"To depend upon many of the smaller communities and utilities to provide for the expense of this removal, would in many instances not only bankrupt such communities, but, foreseeably, would cause considerable delay in the completion of the highway project.

". . . There is a strong presumption of constitutionality attending a legislative enactment, which, unless the evidence of unconstitutionality is clear

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- **Permanent, inlaid color-coding stripe identifies pairs**
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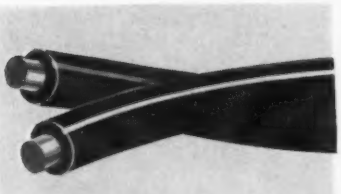
Order Superior IM-RDW for subscriber line use or for the distribution of subscriber circuits from a main cable lead. Available one through eighteen pairs.



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**Patent applied for*

*Write for complete details to*

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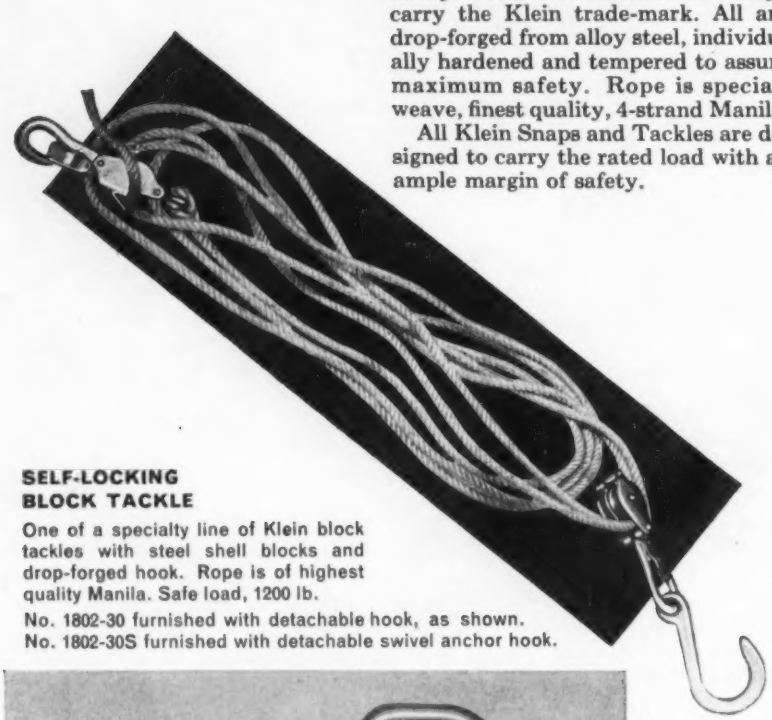
# MAXIMUM SAFETY
## in tackles and snaps

Whether it is a block tackle or a hand line, you're assured of maximum safety when the tackles and snaps carry the Klein trade-mark. All are drop-forged from alloy steel, individually hardened and tempered to assure maximum safety. Rope is special-weave, finest quality, 4-strand Manila.

All Klein Snaps and Tackles are designed to carry the rated load with an ample margin of safety.



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One of a specialty line of Klein block tackles with steel shell blocks and drop-forged hook. Rope is of highest quality Manila. Safe load, 1200 lb.

No. 1802-30 furnished with detachable hook, as shown.
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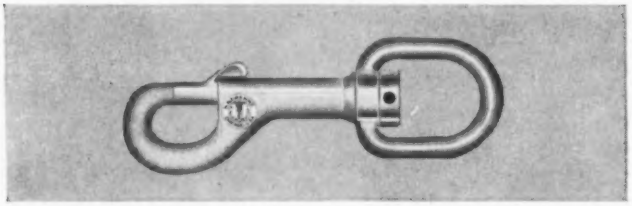

**SWIVEL HAND LINE SNAP**

The only drop-forged snap of this type on the market. Has swivel clevis and quick-acting plunger latch. Will take ½-inch or lighter hand lines. Safe load, 750 lb.

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and convincing, a court will be reluctant to ignore.

"The facilities are for the benefit of all the people in the communities which they serve. They provide communications, transportation of heat, light and fuel. For all practical purposes they are, in a sense, almost as important to the well-being of those who reside in the communities served by them as the transportation of individuals."

In conclusion, the court held that the appropriation was for a public purpose and the law was valid.

### Set Hearing on Purchase Of Wis.-Minn. Company

The Wisconsin Public Service Commission on Jan. 31 was to have heard the application of the Solon Springs Telephone Co. to purchase the Farmers Cooperative Telephone Co., Cloverton, Minn., which operates both in Wisconsin and in Minnesota.

The Solon Springs company plans to serve the Cloverton subscribers from its Danbury, Wis., exchange; to convert Danbury and Webb Lake to dial operation, and to move the Danbury exchange to Cozy Corners.

### Gets OK to Serve in Mo.

The Missouri Public Service Commission has granted the Grand River Mutual Telephone Corp., Princeton, a certificate of convenience and necessity to serve the Graham area. C. W. Chastain, general manager of the Grand River corporation, stated that: "We are not buying the Graham exchange but expect to install a dial system there in about two years, at which time the present company (Mutual Telephone Co. of Graham) will cease operation."

### Ask EAS OK in New York

The New York Telephone Co. (Bell) has applied to the New York Public Service Commission for permission to provide metropolitan area service from its Syracuse exchange with the Rose Hill exchange of the Finger Lakes Telephone Corp., Marcellus. This is in connection with a proposal by the New York company to offer extended area service with Syracuse to nine of its own exchanges.

### Wis. Sale-Purchase Request

The Wisconsin Public Service Commission on Jan. 23 was to have heard the joint application of Eastern Alto Telephone Co., Alto, to sell, and of the Fairwater-Brandon-Alto Telephone Co., Brandon, to buy the former's properties.

### Plan Stock Split in Hawaii

Directors of the Hawaiian Telephone Co. have recommended a two-for-one split of the company's common stock and hope to increase the 1961 dividend

rate to $1.08 a share from $1.00 on the basis of the present stock.

## Seek Emergency Party Line Use Laws in Mont., Neb.

A bill has been introduced into the Montana State Senate which would apply penalties to those who fail to give up a party line in an emergency.

Sen. C. R. Thiessen, one of the bill's four sponsors, said the measure calls for not more than 10 days in jail, or not more than a $25 fine, for not relinquishing a party line in an emergency. The same penalty would apply to anyone requesting a party line on a false pretext.

Notice of the penalties would be printed in all Montana telephone directories.

Senator Thiessen said the measure was requested by the Montana Telephone Association and was endorsed by the Mountain States Telephone & Telegraph Co.

•

A bill has also been introduced in the Nebraska legislature which would make it a misdemeanor to refuse to relinquish a party line in certain emergencies.

(EDITOR'S NOTE: Thirty states have enacted legislation governing the use of a party line in an emergency. A listing was published in TELEPHONY, Jan. 21).

## Wood Pole Conference to Be Held at N. C. State College

The wood products department of the North Carolina School of Forestry is sponsoring The South Atlantic Wood Pole Conference at Raleigh, N. C., on Apr. 5 and 6, to be held in the Student Union on the campus of North Carolina State College.

A comprehensive program of basic technology and current information on production, deterioration, preservative treatment, purchasing, inspection and maintenance of wood utility poles will be presented.

Technical papers, which will also be pre-printed and bound, will be presented by industrial, educational, and governmental specialists and researchers.

Management and technical personnel in operating utilities, and other users of treated wood products, as well as manufacturers of treated wood products will find the conference of value.

Persons wishing to attend the South Atlantic Wood Pole Conference may obtain copies of the conference program and advance registration by writing to the Wood Products Extension Section, 266 Kilgore Hall, North Carolina State College, Raleigh, N. C.

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# 6,700 Subscribers To Benefit By Five REA Loans

FOUR TELEPHONE loans approved by the Rural Electrification Administration will help enable telephone systems to provide new or improved service to 6,705 subscribers in five states and the Virgin Islands, 3,042 of the subscribers receiving service for the first time. These loans total $3,785,000.

The Four States Telephone Co., Brownwood, Tex.; $320,000; Jan. 9.

This loan will help to furnish initial service to 516 subscribers and improve service for 85 subscribers in Arkansas. The borrower proposes to acquire from the Southwestern States Telephone Co. the Marmaduke exchange, and that portion of the Kensett exchange in and around Griffithville. These telephone properties, both located in Arkansas, now furnish dial service to the 85 existing subscribers.

In order to serve the expanded area, Four States plans to construct new dial central offices at Marmaduke and Griffithville.

REA loans to this Texas borrower will help enable the company to furnish new and improved service to 4,531 subscribers in Texas, seven in Arkansas, and four in Louisana. The system, when complete, will consist of 15 exchanges in the three states—six in Texas, five in Arkansas, and four in Louisiana.

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Deer River (Minn.) Telephone Exchange, Inc.; $580,000; Jan. 11.

This loan is designed to improve service for 641 subscribers and furnish initial service to 174 subscribers. There will also be some service in a fringe area. The new borrower now furnishes common battery and magneto service to 481 of the existing subscribers. The remaining 174 are served by three local switcher companies which the borrower proposes to acquire.

The switchers are: Farmers Cooperative Telephone Association; the Suomi Cooperative Telephone Association; and the Wahnena Township Telephone Co.

The company plans a new dial central office designed to replace the present switchboard facilities at Deer River, as part of its expanded system. The present building in Deer River will be remodeled for commercial office use. The company also plans to install mobile radio communications facilities for system maintenance. A portion of these funds will be used to help refinance the borrower's indebtedness.

Kenneth E. Giles is both president and manager of the Deer River Telephone Exchange, Inc.

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Farmers Union Telephone Co., Sussex, N. J.; $1,155,000; Jan. 11.

This company plans to use its REA funds to help improve service for 1,831 subscribers and furnish initial service to 971 subscribers in New Jersey; and in New York. Farmers Union presently provides dial service through exchanges at Sussex, N. J.; and Unionville, N. Y.

The company plans to replace the Unionville facilities with a new and larger dial office, and to expand the Sussex building to provide space for new and larger dial facilities. Headquarters facilities will also be located in the Sussex building.

The borrower also proposes to use a portion of these loan funds for refinancing existing indebtedness.

R. D. Ayers is president and J. Denton Armstrong is manager of the Farmers Union Telephone Co.

•

The Virgin Islands Telephone Corp., Charlotte Amalie, St. Thomas, Virgin Islands; $1,730,000; Jan. 12.

This new borrower of REA funds presently serves 2,514 subscribers through common battery-magneto exchanges at Charlotte Amalie, Christiansted and Frederiksted.

The loan funds are intended to be used to provide initial service to 1,381 subscribers and improved service to 1,106 subscribers in rural areas of the islands. Also the loan will help provide for construction to serve the rural areas.

A new commercial-dial office building with toll facilities; and a new dial office at Christiansted and Frederiksted are scheduled for construction. Inasmuch as these buildings will serve both the urban and the rural sections of the system, the Virgin Islands Telephone Corp. will supplement its own funds with the REA loan. The corporation proposes to add other facilities to serve 2,410 additional subscribers in urban areas of the territory.

S. H. Larrabee is president of the


**GENERAL MACHINE PRODUCTS COMPANY, INC.**

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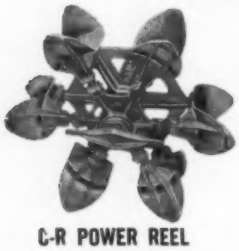

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Virgin Islands Telephone Corp. and Andre Van Walleghem is manager.

•

The REA also announces earlier approval of a loan of $490,000, on January 6, to the Muenster Telephone Corp. of Texas, a new REA borrower.

This loan was made to help enable the company to provide new service to 240 subscribers; and to improve service for 738 subscribers; and to construct headquarters facilities.

## First Computer-Designed Computer Revealed by Bell

The first computer built from complete wiring information and parts lists furnished by another computer has been shipped to Ascension Island, near the target area of the Atlantic Missile Range. The computer is to be used in connection with target tracking tests for Nike-Zeus, the U. S. Army's anti-missile defense system.

Bell Telephone Laboratories engineers revealed on Jan. 16 that the entire logic network of the digital computer, consisting of 47 sub-assemblies, had been built from wiring diagrams, assembly information, and parts lists produced by a specially programmed, general purpose digital computer. The Nike-Zeus computer was built here by the Western Electric Co., prime contractor for the Nike-Zeus system.

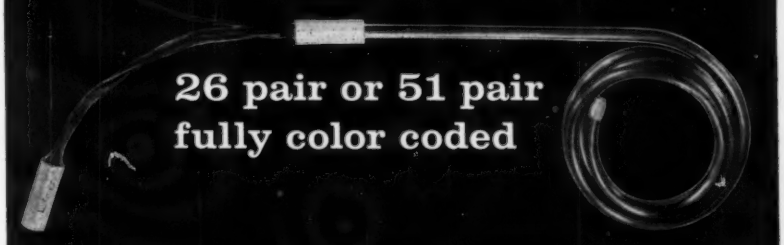
The Bell Laboratories Automatic Design System, abbreviated BLADES, required less than 25 minutes per subassembly to produce manufacturing information which would have consumed four man-weeks of manual effort with conventional drafting methods. Use of the BLADE system can save thousands of man-weeks of time in the design of missile defense equipment and large sums in defense funds.

In addition, manufacturing information can be converted into a control program for an automatic wiring machine, which would do the actual assembly work. Initial experiments on this aspect of the program are now underway, and results indicate that automatic wiring of the mechanically designed computer is feasible. This will, of course, result in additional substantial savings in time and money, according to Bell Labs.

The first step in designing the computer was the synthesis of the logic network to perform the necessary functions. This network was then converted into a set of topologic equations, expressing both the topology and logic of the network, in computer language. (Topology involves the geometric aspects of the network; i.e., the position


MD

CABLE STUBS




The MD Cable Stub is a section of lead sheathed, polyvinyl chloride insulated 24 AWG cable with a pressure plug (gas dam), factory installed at the end of the sheath. Each stub is factory tested to insure that it is gas tight before shipment.

FOUR PRIMARY USES OF THE MD CABLE STUB

1. Permits the use of Ready Access type terminals on paper and pulp insulated cables.
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of each component and its relation to other components.)

The general purpose computer then used these topologic equations to produce sheets of instructions specifying the number of modular logic packages to be used in a subassembly.

The instructions also specified the pins to be interconnected, the size and length of wire to be used in connecting them, and the wire paths to be followed for minimum path length. Any special-purpose logic packages to be used in a subassembly were also specified by the computer.

After the wiring information sheets were completed, a complete parts list including logic packages, externally wired resistors and capacitors, and necessary wire was prepared.

The majority of the logic packages in the Zeus computer are of a single general-purpose type. Any logic function can be performed anywhere on the subassembly by varying the interconnections among the packages. The module package contains four individual and independent logic switches which can be interconnected to form 2, 3, or 4-terminal logic gates, or flip-flop circuits.

The computer shipped on Jan. 16 uses about 2,500 of these logic packages, plus about 200 packages of other types in its 47 subassemblies. The BLADE system, as currently designed, can handle up to 12 different types of packages.

Separate wiring instructions for power and signal wiring are provided. Also, power wiring is arranged so that no two successive logic functions are supplied by the same power bus.

## George C. Richert, USITA Secretary, Dies

George C. Richert, 57, secretary, assistant treasurer and engineer of the United States Independent Telephone Association, died on Jan. 20 at his home in Silver Spring, Md.

Mr. Richert was born on Jan. 4, 1904, in Duquesne, Pa. No stranger to hard work, while in high school, he spent his summer vacations as a mill hearth helper in a steel mill.

After graduation from Pennsylvania State College, he served for a year as an auditor for the Pittsburgh Insurance Co.

He entered the telephone industry as a commercial representative of the Bell Telephone Co. of Pennsylvania at Uniontown, gaining experience in pay-station installation work, collections,

G. C. RICHERT

rights-of-way and filling in as a cashier.

After a year at Uniontown, in 1927, he was transferred to the company's Pittsburgh office.

He left the company in 1942 after having held positions as assistant sales manager, manager and commercial staff engineer, gaining experience in sales, engineering, traffic, plant and commercial phases of the telephone industry. His last Bell of Pennsylvania post was on the staff of the commercial engineer for the western area.

During the war, Mr. Richert was technical analyst in the Communications Division of the War Production Board.

After the war, he became electrical engineer in the Public Utilities Division of the Treasury Department.

He also had served as communications consultant to various federal agencies, and was responsible for the evaluation of German and Japanese equipment obtained by military and civilian personnel.

He also had been a technologist in the Electronics and Communications Division of the Department of Commerce.

Joining USITA on Aug. 14, 1947, Mr. Richert was named engineer and technical assistant to Clyde S. Bailey, executive vice president.

Survivors include the widow, L. Margaret, and three sisters, Mrs. Frank Zimmerman of St. Petersburg, Fla., Mrs. Fred Metzgar of Columbus, O., and Mrs. R. H. Morrow of Duquesne, Pa.

## Incorporate in Kansas

A charter of incorporation has been granted to the Mo-Kan Dial Co., Inc., Louisburg, Kan. John E. Kircher has been named resident agent.

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## Telephone Man Is Guest Speaker at WSE Meeting

To inaugurate its new management division, the Western Society of Engineers of Chicago, Ill. will have a telephone man as guest speaker at its Feb. 8 luncheon. Assembly time is 11:40 a.m. and adjournment is at 1:15 p.m. The luncheon meeting will be held at the society's headquarters, 84 E. Randolph St., Chicago, on the sixth floor.

The speaker is A. F. Birmingham, staff supervisor in the Springfield, Ill., district office of American Telephone & Telegraph Co. His subject will be "Index Numbers as Tools of Modern Management."

Mr. Birmingham has made an extensive study of the philosophy, structure, and use of index numbers in management. They are used in the long lines department of AT&T as sensitive indicators of service and maintenance conditions. His talk describes how they are developed and used in general industry and in telephone work in particular.

The Western Society of Engineers includes in its membership hundreds of engineers and executives in the communications industry. Daniel E. Clark, director of research, Automatic Electric Laboratories, is chairman of the communication engineering section of the society.

The new management division was formed because so many engineers need management "know-how" as much as technical skill, said Ray Maxson, president of WSE. Mr. Maxson himself is an example of an engineer in management, having been senior vice president of Commonwealth Edison Co. as a culmination of a long engineering and management career with that company.

Interested readers of TELEPHONY are invited. If located in the area, readers can call RA 6-1736 or 727-4195 to make reservations. They should mention having seen this news item and should ask for Mr. Sayner, who is in charge of arrangements for the event.

## Beware Many Promises

"The man who is wantonly profuse of his promises ought to sink his credit as much as a tradesman would by uttering a great number of promissory notes payable at a distant day. The truest conclusion in both cases is, that neither intends or will be able to pay. And as the latter most probably intends to cheat you of your money, so the former at least designs to cheat you of your thanks."—FIELDING.

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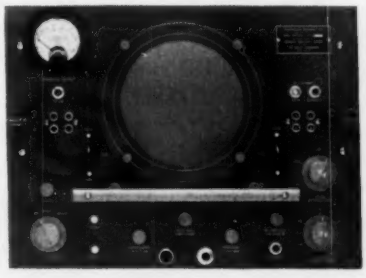

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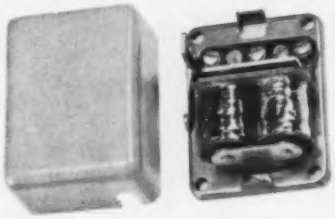

SE-7A, SE-7C, SE-7E BUZZERS

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THE FINEST telephone and intercom use buzzer available! Made under patent license from Western Electric Co., each unit is equipped with silver contacts and reed mounted armature with flat retractile spring and top. MODERN COLOR blue-beige plastic cover gives pleasing sound. Longest possible life guaranteed. Available in several D.C. and 60 cycle A.C. voltages:

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|---|---|---|---|---|---|
| SE-7A | 270.0 | 14 | 40 | 15 | 21 |
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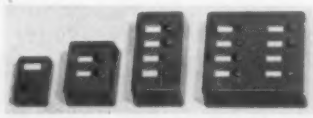
USED WITH the popular new executive-type low cost SE pushbutton series. The SE-7 Buzzer answers every subscriber audible signalling need:



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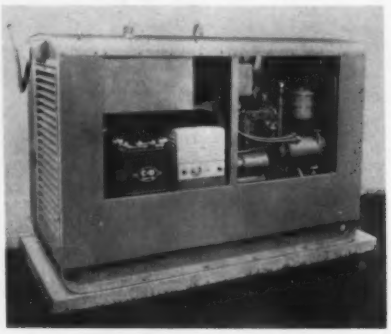
# News on New Products

**CHARGER-BATTERY COMBINATION FOR STANDBY ENGINE STARTING**—A new charger-battery combination to provide standby engine starting is available from C & D Batteries, Division of The Electric Autolite Co. The combination consists of a Slyver-Clad battery with lead calcium plates and an AutoReg silicon rectifier charger designed as a companion to the battery. The combination produces instantaneous starting current for standby gasoline or Diesel engines.



The Slyver-Clad battery requires watering only once a year, C & D states. In addition, the lead-calcium alloy used in the grids increases battery life expectancy because it is subject to less internal corrosion than conventional lead-antimony grids.

The company states the charger is a C & D AutoReg that provides a constant dc output over an ac line input variation as high as ± 15 per cent.

Heart of the charger is a hermetically sealed silicon rectifier with no known aging characteristics, according to C & D. There are no aging taps and no relays to adjust. Trained personnel are not required for operation. The low watering requirements of the lead-calcium Slyver-Clad and the minimum maintenance requirements of the AutoReg charger make the combination ideal for use in remote locations. Request NP1527.

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**THERMO-FAX BRAND SYSTEMS PAPER**—Development of new copy papers that will make black-on-white permanent reproductions in any Thermo-Fax copying machine at a cost of less than two cents per copy has been announced by Minnesota Mining & Mfg. Co. (3M).

The new process consists of two unique papers that team together to virtually eliminate the need for carbon copying of letters, order forms, interoffice memos, reports and similar internally originated documents, the company said.

The new papers are Thermo-Fax Type "A" Pink Systems Paper and Type "B" White Systems Paper. They were designed to fill a need in all offices where error-free multiple copies of documents, letters and other information are needed quickly and economically.

The announcement said the new method requires no inks, stencils, special equipment or trained operators.

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Please have the manufacturer send me without obligation the literature indicated by the following numbers:

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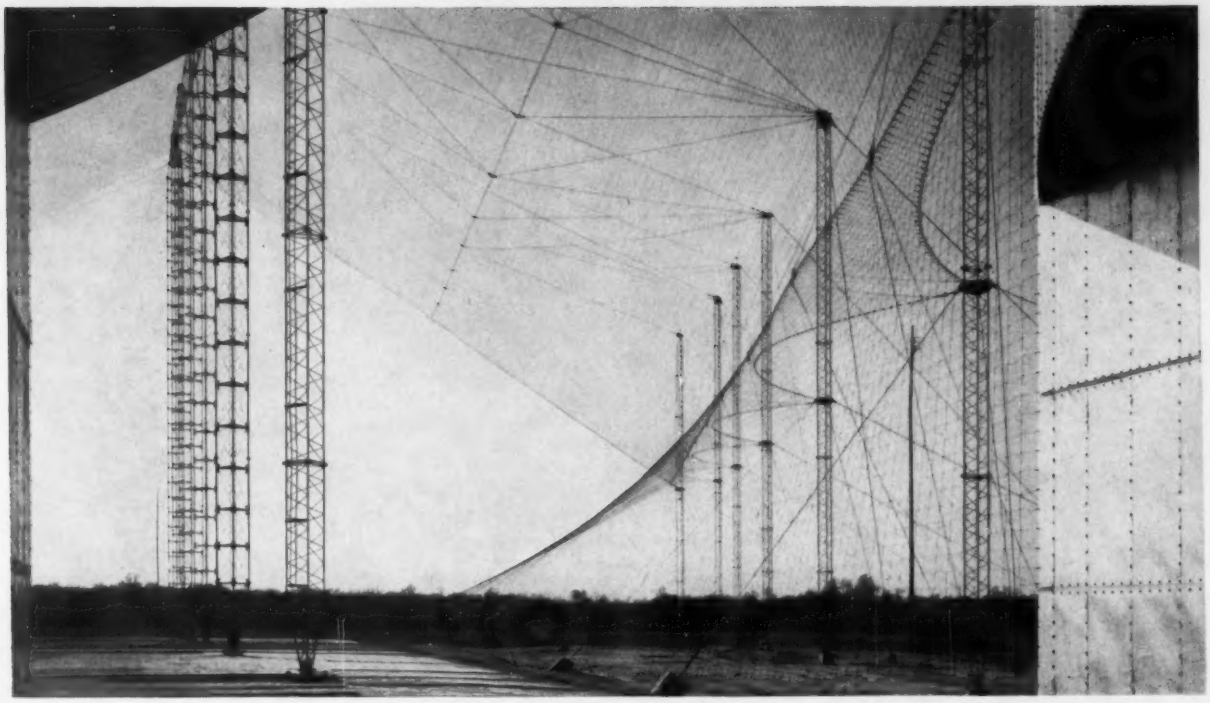
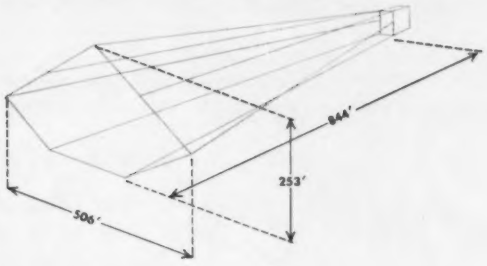


# THE HORN of the ARMY'S BIG EAR

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You're looking through the "inner ear" of one of the world's biggest hearing aids. It's the U.S. Army Signal Corps' TAHA—short for Tapered Aperture Horn Antenna. Located in Maryland, TAHA is a highly directional antenna aimed at Hawaii. It is an excitingly new development that reduces interference in long-range, high-frequency communications.

From the "feed house" or apex of the antenna system, a giant, cone-shaped wire-fabric horn reaches out 844 feet to scoop in long-distance radio signals. The horn, with a maximum height of 253 feet, is held aloft by 18 steel towers.

Here, as in many other important engineering projects, Copperweld Steel Company products were specified. And you can see why. Permanent strength and conductivity were vital requirements. The millions of feet of wire fabric in the horn were made with Copperweld Wire. In addition, more than 80,000 double-strand Copperweld preformed tie wires were used to assure proper and permanent spacing of each latitudinal and longitudinal wire in the fabric.

For antennas and towers of all types, Copperweld Wire and Guy Strand provide lasting, rust-proof strength. Each wire has a thick outer layer of copper molten-welded to a core of high-strength steel. The copper cannot flake, crack or peel. The strength of the steel core is permanent—rust and corrosion simply can't happen.

COPPERWELD STEEL COMPANY
WIRE AND CABLE DIVISION *Glassport, Pa.*
For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, N. Y.

The Type A paper serves as the original, or master, and is used just as any ordinary office paper or form for typing, printing or writing. It erases easily and is perfectly dry and clean, the company said, and a single Type A original may be used to make up to 25 or more sharp, clear, black-on-white copies on the Thermo-Fax Type B Systems Paper.

According to the 3M company, the Type B White Paper is a high quality, stationery-weight copy paper. The copied image on the new paper is permanent and it may be used in the same way as an original document to make an unlimited number of copies on any other type of Thermo-Fax brand copy paper.

This new systems paper team offers complete flexibility in cutting the cost of office form distribution, the company stated. The pink Type A sheet can be pre-printed with a company letterhead, or for such items as bulletins, reports, requisitions, invoices, purchase and production orders, analysis sheets and others. This master sheet also can be typed on or written on repeatedly so additional information can be added to an existing form.

The Type B paper is then inserted along with the Type A master into any Thermo-Fax copying machine to issue

bulletins, prepare information copies of letters, distribute the data entered on printed forms and, in fact, the company said, provide permanent, multiple copies of any typed, printed or written information with each copy made in a four-second, one-step process.

Cost of the Type A master ranges down to 2.33 cents per sheet, the announcement added, with the Type B costing as little as 1.84 cents per sheet.

Considering, it said, that a single sheet of the Type A Pink Systems Paper may be used to make 25 or more copies on the Type B White, the average cost of these high quality reproductions comes to less than 2 cents per copy when the papers are purchased in quantity lots. Request NP1528.

•

**LOW-LOSS ELECTRICAL-GRADE POLYETHYLENE** — The development of a new polyethylene compound with superior low-loss electrical properties has been announced by Union Carbide Plastics Co.

Specifically designed for primary insulation of transoceanic submarine telephone cable systems now being planned, the material, designated Bakelite DFDA-0173 Natural, may prove valuable in high voltage applications and other areas where ultra-critical control of properties is required.

DFDA-0173 is characterized as an unmodified, very high molecular weight polyethylene compound containing only antioxidant. Technological developments have made it possible to actually increase the resistance to stress-cracking while eliminating the butyl rubber formerly used in such compounds to improve that property, the company states. This excludes the major source of contaminants previously encountered and permits the production of a compound of exceptional purity.

Union Carbide Plastics reports the composition, electrical characteristics and other pertinent properties of the new compound are controlled within rigidly narrow limits. This is of vital importance in the insulation of long conductors where variation in the dielectric constant, dissipation factor and even the thickness of the insulation reduces the efficiency of the cable.

Bakelite DFDA-0173 Natural is now available in commercial quantities. Its typical properties* are:

| | |
|---|---|
| Density | 0.923 |
| Tensile Strength, psi. | 2400 |
| Yield Strength, psi. | 1600 |
| Ultimate Elongation, per cent | 600 |
| Brittle Temp. | No Failures at –45° C. |
| Melt Index, °C/min. | Less than 0.1 |
| Dissipation Factor at 23°C. and $10^3$ to $10^6$ cycles | .00012 |
| Dielectric Constant at 23°C. and $10^3$ to $10^6$ cycles | 2.283 |
| Environmental Stress Cracking Resistance | |
| In "Igepal" | No Failures |
| In "Propanol" | No Failures |

*Data obtained on molded plaques prepared by the Birks-Rudin method.

Request NP1529.

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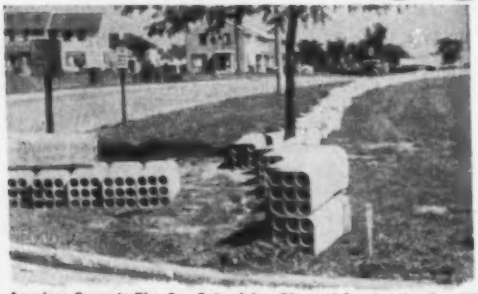
**6 KMC MICROWAVE SYSTEM** — Lynch Communication Systems Inc. announces entry into the microwave communication field with an advanced, flexible "building block" 6 kmc microwave system which provides duplex multichannel service for complete point-to-


CONDEX* MULTIPLE CONCRETE CONDUIT



Special fittings—miters—short lengths—expanded web sections available, also adapters to claytile, transite and fiber duct.

9 DUCT FORMATION ON JOB SITE

American Concrete Pipe Co., Sub. of Am. Pipe and Construction Co., 2025 S. Seventh St., Phoenix, Ariz. Tel: AL 2-7566
American Pipe and Construction Co., 4635 Firestone Blvd., Southgate, Calif. Tel: LOrain 4-2511
American Pipe and Construction Co., 101 Alquire Rd., Hayward, Calif. Tel: JEfferson 7-2072
American Pipe and Construction Co., 518 N.E. Columbia Blvd., Portland, Ore. Tel: BUtler 5-2531
Concrete Conduit Corp., 130-01 Northern Blvd. Corona, N. Y. Tel: ILlinois 7-1515
Chicago Pre-Cast Products Corp., 29W629 North Aurora Rd., Naperville, Ill. Tel: EL 5-2700—2701
Denver Concrete Products Co., 3020 Marshall, Arvada, Colo. Tel: HA 2-4202
Eastern Pre-Cast Corporation, 675 Main St., Tullytown, Pa. Tel: Windsor 9-3750
Elmore Concrete Products Co., Division of North Star Concrete Co., Elmore, Minn. Tel: Elmore 52
J. E. Evans Concrete Products Inc., Cleveland, Ohio. Home Office: Indianapolis, Ind. Tel: WAlnut 5-5301
J. E. Evans Concrete Products Inc., Shelbyville, Ind. Tel: WAlnut 5-5301
Neff Concrete Products Co., 711 Section St., Danville, Ill. Tel: Hickory 6-1016
PRE-CON Limited, Oronda Rd., Brampton, Ontario, Canada. Tel: HUdson 1-3492 (Toronto)
Pre-Con of Quebec, Ltd., Montreal, Quebec, Canada. Home Office: Brampton, Ont. Tel: HUdson 1-3942 (Toronto)
T.E.L. Pre-Cast Products Corp., 1 Industrial Ave., Edgewater, Florida. Tel: GArden 8-9881
Utah Concrete Pipe Co., 379—17th St., Ogden, Utah. Tel: EXport 9-1171
For information regarding CONDEX* Multiple-Duct Concrete Conduit, call or write your local producer, or the parent company.
*Registered Trademark

CONDEX
GAGNE ENTERPRISES, INC.
29W 629 NORTH AURORA ROAD
NAPERVILLE, ILLINOIS
EL 5-2700-2701

point communication for all voice, control and data transmission applications. Distribution will be through the company's nationwide U. S. distributor, Graybar Electric Co., Inc.

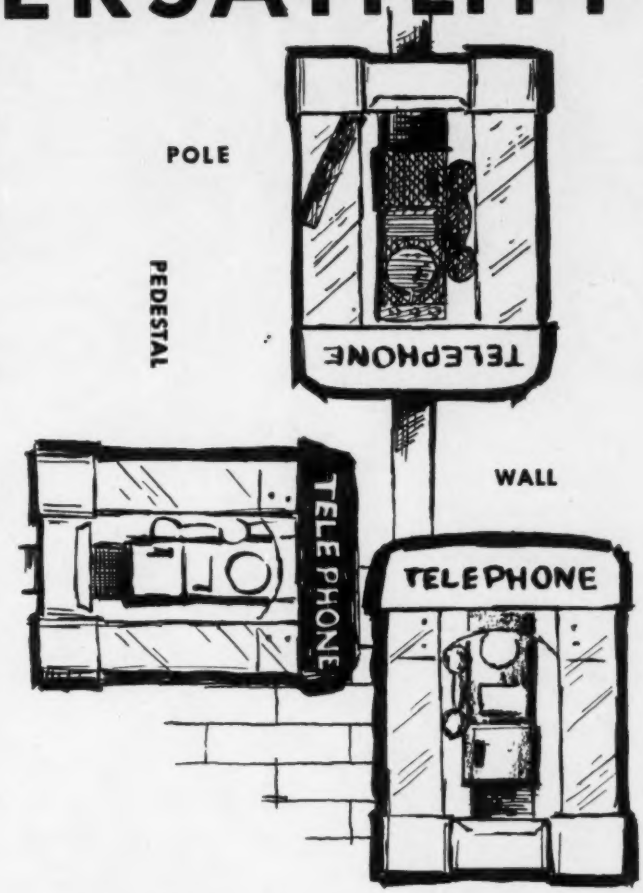
Donald E. Campbell, Lynch president, said the Lynch microwave system provides a low-cost flexible transmission medium for telephone, telegraph, teleprinter, facsimile, protective and relaying telemetering, supervisory control, monitoring, data and other communication signals. Lynch microwave systems are available for operation in the common carrier band from 5925 to 6425 megacycles; the industrial band (operational fixed) from 6575 to 6875 megacycles; and the government band between 7125 and 7650 megacycles.

Microwave radio transmission provides a medium for carrying a large number of simultaneous telephone or data circuits known as channels. The Lynch microwave system when used in conjunction with their newly perfected multiplexing equipment will establish from one to 600 such circuits, and makes possible the addition of communication routing options and extra channels without changing existing equipment, Lynch states. The RF (radio frequency) terminal equipment is the basic "building block" for all stations. Multiple combinations of this basic assembly are used to form repeater and junction stations. Lynch multiplexing equipment is designed to provide from one to 600 channels with no penalty to the small user who must start with 12 channels or less. Therefore, the company states, a Lynch microwave system can be installed initially with only a few carrier channels and, as traffic increases, it can be expanded economically by adding more channeling equipment. As many as four paralleled microwave channels can use the original antenna system for system expansion or for standby or frequency diversity operation.

Basic channeling equipment for the Lynch microwave system is another new Lynch product—the recently introduced fully transistorized B910 multiplexing system which makes possible the simultaneous transmission of a large number of voice carrier channels over a single circuit. This system will economically provide from one to 12 channels, and can be expanded to an ultimate of 600 channels of voice communication or certain types of data transmission over a single microwave circuit. Mr. Campbell said the first installation of the B910 multiplexing system will be in operation for a California telephone company early in 1961, providing in-service telephone circuits over microwave systems.


VERSATILITY

VERSATILITY




VERSATILITY MEANS BETTER TELEPHONE INSTALLATIONS

The revenue from a public pay station depends on how well it serves its location. The Gladwin Boothette with its line of accessories can serve any from permanent to temporary. Wall, pedestal, or pole mount: Drive-up or walk-up: from guard rails to complete signing, Gladwin has it.

Increased convenience, increased revenue, and lower overhead are all products of actual Boothette installations. Capitalize on the self-contained lighting and signing with the Gladwin GP-2200 Boothette.

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**Other Lynch channeling equipments available for microwave application include: FM multiplexing, subscriber single sideband suppressed carrier telephone systems and one-way data transmission channels.**

**Mr. Campbell said the addition of microwave equipment to the expanding line of Lynch communication products and systems fits into the company's long-range plan and is motivated by the increasing use of microwave by telephone companies and other communication users. Also, the growing use of automation by various industries and the recent action of the Federal Communications Commission permitting use of microwave communication systems by private industry such as banks, manufacturers, department store chains and transportation companies, is indicative of the future importance of microwave communication systems.**

**According to Mr. Campbell, the Lynch complete communication package includes not only microwave RF equipment and a wide variety and type of carrier channelizing equipment, but also construction of buildings, access roads and towers, plus factory supervised installation and factory authorized maintenance. Request NP1530.**

# PUBLIC ELECTIONS IN AN ELECTRONIC WORLD

*Continued from page 28*

to an 18-hour period; names in the first half of the alphabet could be urged to vote in the morning and those in the second half in the afternoon; users of Data-Phone facilities could go on a public holiday; election day could be changed from Tuesday to Sunday when business users are off the lines; etc.

At the end of the voting day, and after a reasonable period beyond the closing of the polls, the Televoter could catch up with the calls of the last-minute voters and announce the results in a matter of minutes.

All that is needed to accomplish the above technological revolution in public voting is a well-constructed and "well-instructed" electronic computer plus a simple system of codes for dialing the vote. The only other requirement would be a system for preventing fraud.

Let us assume that Citizen Jekyll plans to show his enthusiasm for one party or one candidate by "voting" Citizen Smith's Voter Code Number as well as his own. Three measures could readily prevent Mr. Jekyll from succeeding in this voting fraud. The Televoter could be instructed to accept only one vote per voter code number. Each telephoning voter could be required to dial not only his personal code number but also the number of the telephone from which he is calling. Further, the Televoter could be instructed to receive no votes telephoned from outside the coded precinct.

If Mr. Jekyll persists in his fraudulent behavior, the Televoter could report to a standby local election official, that is, transfer the call to a *live* voice. That election official, receiving from the Televoter the voter code number being defrauded as well as the number from which the telephone call is being placed, could then proceed to make an investigation.

Most voters would, of course, never attempt such fraud in a system of this kind. The real frauds would probably hang up and forget the whole thing, that is, until a post-election investigator appeared with a summons to appear in court. Others might make errors in dialing their numbers, and this could be clarified quite easily with the election official.

With the Televoter system, the cost of conducting an election could also be handled in new ways. At present, the state or community pays out of its regular budget for an election. Under the Televoter system, the state could continue to carry this cost: the voter's coin or private telephone charge, if any, could be refunded. Or, the voter could make his telephonic vote at a reduced rate, say, five cents, from either a public or private telephone. This latter procedure and charge could spread the cost of an election among those actually participating. Or a telephone company might consider providing the service in the public interest, at cost.

Needless to say, a variety of safeguards would have to be developed to protect the sanctity of the ballot box, or, should we say, "telection box." Among those needed would be a system for guaranteeing that each voter is casting only *his own* ballot by telephone. Special telephones might have to be installed in areas where dial telephones are not readily available. Mobile telephonic voting stations might have to be devised to cover the rural and remote areas.

This Televoter proposal is likely to excite the interest of the producers of electronic computing equipment as well as telephone companies. It is also likely to be greeted with stolid resistance by the producers of contemporary


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• The low-cost, fast way to dig holes. Fits on any A-frame. No expensive installation. Digs holes up to 8 ft. deep and 20 in. in diameter. One man operates digger with all controls mounted on machine. Made in 9-hp. and 18-hp. models. Auger is cleaned by spinning. Electric starter available. Digs anchor holes with ease. Operator shielded from moving parts. Film of machine in operation available. Write for descriptive bulletin.

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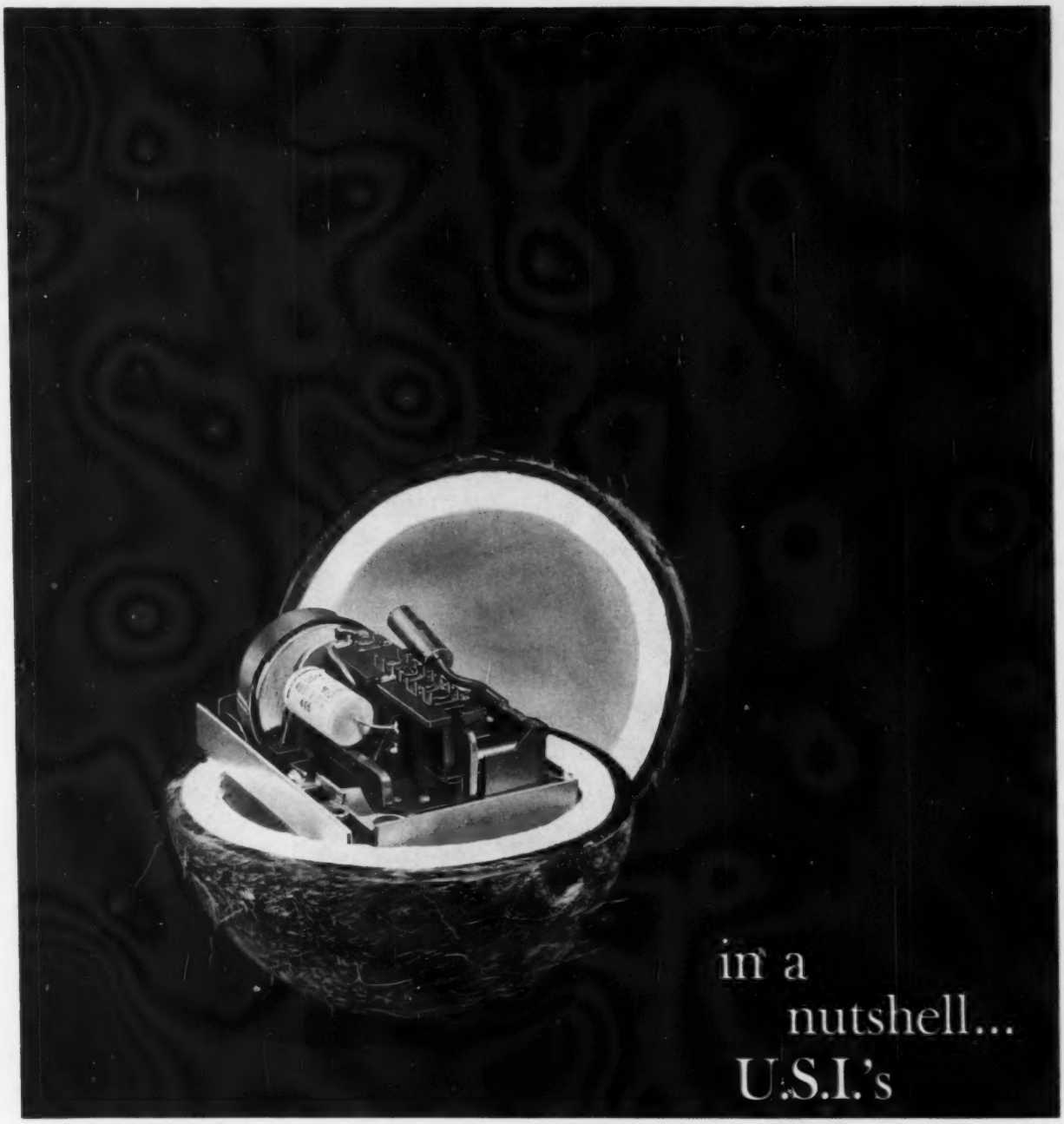
**CEDAR POINT, KANSAS**
***Tel.:* BRoadway 4-3745**



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- Housed in durable, shock resistant plastic box
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- Easily adjusted ringer volume control
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CHARLOTTESVILLE, VIRGINIA

voting machines, printers of paper ballots, and political party officials. Among conscientious voters, however, the thought of being in convenient telephonic touch with one's government may be too tantalizing to resist very long.

## FLORIDIANS TOLD THREATS TO BUSINESS

*Continued from page 20*

ple give us ideas for improvement in company operations.

(5) **"Motivate** — Motivating is getting other people to do the things we want them to do. Let's recognize the fact that most of our people *want* to do a good job. Our job is to create a desire in our people to *learn more* so we can pay them more. In motivating people, we must be fair and honest in our dealings with our employes. Integrity is honored and respected by all people.

(6) **"Coordinate** — We have made plans so that we know where we are going. We know our objective. We have our organization so that we know who reports to whom and who is to do what. We have established communication within our organization so that our people know *why* they are doing their job; in short, our people are working together.

"Don't run your business by the seat of your pants, manage it."

Clifford C. Pearce of Riceville, Ia., president of the United States Independent Telephone Association, urged all Independent telephone companies to become members of the national association and take an active part in its affairs. He said that with all of the dynamic growth and the future changes in the telephone art the USITA is truly "the vanguard of the 60's" for the Independent telephone industry.

Speaking of the achievements of the 50's compared to some of the things the industry will need to achieve in the 60's, Mr. Pearce said:

"Those of you who have been in the telephone business longer than I know that we have made more progress in the telephone business during the last 15 years than we made in the previous 50. During the last world war and prior thereto, we were largely engaged in transmitting the human voice over wires. Now we have become a communications industry.

"During the past 10 years we have seen many things come to pass—Direct Distance Dialing, All Number Calling, CAMA, mark sensing, touch tone calling, Dataphone, call director, Princess telephone, transistor, microwave, waveguide, over-the-horizon transmission, solar battery, and printed circuits. Many of these words and phrases, most of which we had never heard before, have become common-place."

Commenting upon the introduction and development of space communications, Mr. Pearce said he realized that the small telephone companies are not going into the satellite business for a long time to come. However, he warned that they had better start giving consideration to the effects satellite communications and other rapidly occurring inventions are going to have on their future operations. Above all, he said, the small companies had better start thinking seriously about what they are going to do to provide adequate circuits and facilities to accommodate the numerous types of communications which they will be called upon to provide. He said further:

"Although it is plain that we face some terrifying challenges during the next 10 years, we cannot help but be optimistic about the future of the telephone industry. The challenges will bring with them many openings for jobs, many opportunities for investment and for profit. And there will be opportunities for service such as we have never known before. Most students of our business believe that the brightest era and our largest opportunities lie ahead. There seems to be no let up in demand for telephone service. The demand for communications service is just beginning."

The second day of the convention was devoted to two conferences — one on traffic and another on commercial and plant.

F. L. Vanderwater, general traffic engineer of General Telephone Co. of Florida, addressed the traffic conference on the importance of traffic engineering in providing equipment to render adequate telephone service.

He stated that traffic engineering's interest in service encompasses three fields:

(1) Dial equipment engineering . . . providing adequate dial equipment, efficiently arranged.

(2) Dial administration . . . overseeing its use to be sure that it is used efficiently.

(3) Toll equipment engineering . . . providing adequate switchboard positions, toll circuits, etc., also efficiently arranged.

He presented this one paragraph which sums up the responsibility of the traffic engineer: "The traffic engineer's job is to see that facilities of the *right* kind and of the *right* amounts are in the *right* place at the *right* time to give the *right* grade of telephone service."

R. E. King, general traffic manager of Inter County Telephone & Telegraph Co., Ft. Myers, Fla., addressing the traffic conference, pointed out that automation in the telephone business has not resulted in large-scale displace-


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**BETTER THAN FABRIC**
Lighter than canvas. Won't chip, peel, rot or mildew. Resistant to acids, oils, alkalies.

**INTENSIFIES DAYLIGHT**
Complete rain and wind protection with no light loss on dull days.

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20-gauge KRENE has dielectric resistance to 16,000 volts. Flame resistance exceeds Flammable Fabrics Act requirements.

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weighs only 9 lbs. Front and top flap opens for easy entry. Raise and snap secure for ventilation. Top spring bar assures rain run-off. Fits Bell System frames.

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ment of workers, as some predicted, but instead it has brought about the need to give more consideration to the qualifications and performance of employes. On this point, he said:

"Automation's most important impact will not be on unemployment but on the qualifications and functions of employes. Large numbers of people will be required behind the scenes in new, highly skilled jobs. In addition, large numbers of highly-educated people will be needed in new jobs. Large numbers will be needed for new managerial jobs requiring a high ability to think, to analyze, to make decisions, and to assume responsibilities. This increase, both in the numbers of managers, and in the demands made on them, may well be the largest of all the social impacts of automation.

"Times are changing fast. Today is the day for action. Tomorrow will be too late. We must act today if we expect to have good managers in our business tomorrow. Management must never aim at replacing what is today. It must always focus on the needs of tomorrow. Managers do not become broader by adding one narrow specialty to another; they become broader by seeing the business as a whole. Management must focus on performance rather than on promise and on tomorrow's requirements rather than those of today.

The commercial and plant conference was given over to a discussion of transmission, with particular attention to cable loading. Also, there was a demonstration of plant irregularities affecting transmission and how to avoid, find and correct them.

The conference was presided over by Stanley Warth, Florida transmission and protection engineer of Southern Bell Telephone & Telegraph Co., who discussed "Are We Meeting Today's Transmission Objectives for Direct Distance Dialing?"

R. B. Strange, plant supervisor and G. D. Boggs, exchange transmission engineer for Southern Bell, conducted the above-mentioned demonstration.

The following directors of the Florida association were elected at the convention:

H. A. Bishop Jr. of Stark; Carl D. Brorein and Carl D. Brorein Jr., both of Tampa; E. L. Cox of Perry; M. N. Drew of Quincy; John P. Evans of Jacksonville; B. A. Galloway and J. K. Galloway, both of Winter Park.

J. N. Johnson of Fort Myers; Ralph Maner of Tampa; Fred S. McGehee of Marianna; E. M. Menendez of Tallahassee; Josephine Poppleton of Tampa; W. E. Quattlebaum Jr., of Bonifay.

John B. Renwick of Tampa; J. L. Sharit of Port St. Joe; D. T. Shearer of Fort Myers; R. W. Shriner of Tampa; Max Wettstein of Ocala; Otto Wettstein III of Live Oak; E. D. Wilkinson

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TELEPHON
Model TBM Mast provides complete service entrance facilities for outdoor telephone booths with the definite plus advantages of lower cost and easier installation. Raises power lines for specified ground clearance.
FITS MOST BOOTHS
Meets Code Requirements
LOOKS BETTER The TBM Mast is engineered for the job. Adds to the appearance of any booth.
LASTS LONGER Heavy gauge steel tubing used throughout for life-time service. Only heavy duty fittings used.
COSTS LESS Actual installations show savings up to two-thirds over conventional installations.
REMOVABLE Can be moved from one location to another. Simply disconnect lines and pull mast out of ground sleeve.

Utility Service Co., Inc.

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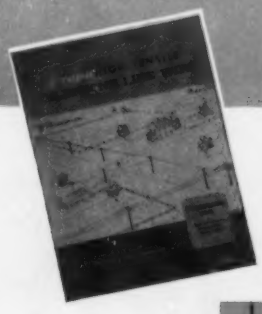
## EVERYTHING YOU NEED IN A GOOD RURAL TELEPHONE WIRE

**Ample Conductivity**
**Superior Strength**
**Dependable Life**
**Low Cost**

When you or your engineers specify a telephone wire for rural lines you want to be sure that it will fulfill every practical requirement yet be economical to install and maintain. Crapo HTL-135 High-Tensile Line Wire was conceived and developed with that purpose in mind. Its voice transmission and ringing qualities are excellent for subscriber loops in typical rural systems. Its superior physical strength and its fatigue endurance make posible long-span, low-cost construction with an adequate margin of safety and a minimum of maintenance.

**Comparative cost studies show that substantial savings can be realized by building rural lines with Crapo HTL-135. For dependable and economical performance, insist upon this reliable, time-proven conductor!**



**WRITE** for Engineering Manual TM-59 containing Sag and Tension Data, Staking Tables and Guying Tables.

Crapo HTL-135
INDIANA STEEL & WIRE CO., INC. MUNCIE, INDIANA U. S. A.

INDIANA STEEL & WIRE CO., INC.
Muncie, Indiana


of Tallahassee, and C. J. Yates of Jacksonville.

The directors elected the following officers: President, Mr. Renwick; first vice president, B. A. Galloway; second vice president, Mr. Wilkinson, and secretary-treasurer, Miss Poppleton.

## IN THE NATION'S CAPITAL

*Continued from page 18*

But already we know that on the basis of his own qualities—a wise and patient administrator, a gentleman and scholar, a competent soldier-statesman —Ike will rank with the best for the ages ahead.

### *On Pay TV Again*

On the eve of the new Kennedy administration, the Federal Communications Commission decided to take the final plunge and authorize the controversial subscription TV or so-called "pay TV." On Jan. 18 the FCC, in spite of warnings and virtual threats by critics in Congress, decided to give the green signal for the first major pay television project in the United States. The commission's order took the form of a crisp one-paragraph statement authorizing a three-year operation of toll television station WHCT, which operates in Hartford, Conn., on Channel 18.

RKO General, Inc., and Zenith Radio Corp. will conduct the experiment in a joint venture over RKO's Channel 18. During the hearings by the FCC last fall, the proposal was vigorously opposed by theater owners who feared pay TV would kill the theater business. Promoters of the trial said they would show attractions not seen on free television. The FCC said its statement "does not constitute commission action" but was merely an announcement of its proposed disposition of the application. It reserved the right to reach a different decision in adopting a formal decision. Commission sources said this would be very unusual, however.

RKO and Zenith plan to conduct the test through a separate company called Hartford Phonevision Co. The firm plans to rent subscribers a special device which would decode a scrambled picture on their television screens. The device would cost between $7.50 and $10 for installation charges. Promoters said they plan to charge between 25 cents and $2.50 for such attractions as first-run movies, operas, championship boxing matches, and Broadway shows.

The proposed test also was opposed by the National Association of Broadcasters. The broadcasters voiced fears that pay television eventually would destroy free television. However, RKO and Zenith promised not to show any-

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# ACHIEVERFONE

AChieverfone, the new 150 Mc band mobile radiotelephone by AC, is specifically designed for all modern applications. It permits your customers to place calls whenever they wish—to any telephone in the world!

Unlike most common carrier MRS systems with only one or two frequencies, AChieverfone has a four channel capacity. This means that calls are rarely missed or delayed. Furthermore, AChieverfone's channels are selected by pushbuttons.

AChieverfone's modern design also includes a dramatic reduction in the number of components. Instead of three or more separate units, AChieverfone has only two — a unique, simplified control head and a compact R-T unit.

Consider AChieverfone for all your customers. Its styling is as attractive as the newest of today's home telephones. Feature for feature, AChieverfone is the most modern MRS system available.

**SPECIFICATIONS—FCC Type Accepted**

**Transmitter:** 144-174 Mc, 4 Channel
RF output: 22.5 watts into 52 ohm load

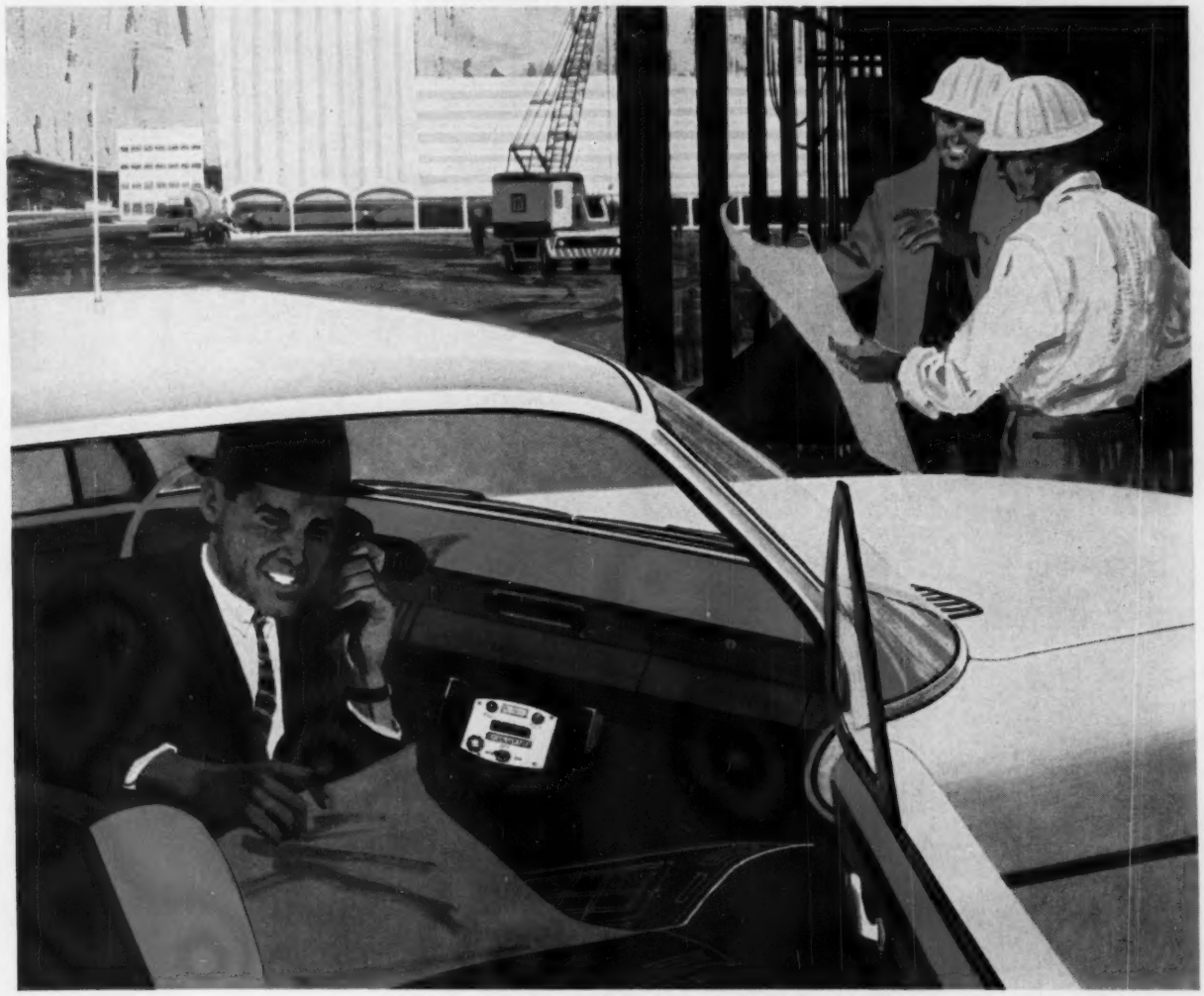
**Receiver:** 144-174 Mc, 4 Channel
Wide Band (60kc) or Narrow Band (30kc) models available (Wide Band quickly converted to narrow by substituting only I.F. filter)

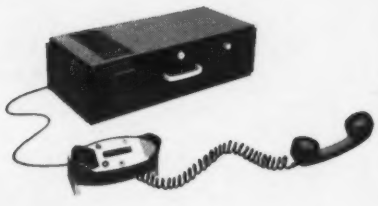
Frequency Stability: within 0.0005%

Selective Signaling: 51,000 five-digit (compatible, 2-tone, sequential) codes available

Size: Receiver-Transmitter, 21⅛" x 8⅜" x 6¼"

Weight: 35.5 pounds, including receiver-transmitter, control head and interconnecting cable





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thing on Pay TV that could be seen on conventional television.

There have been other pay television experiments in the past, but they have been of limited scope over special wires and not over federally controlled air waves. RKO and Zenith plan to spend up to 10 million dollars on the experiment. They estimated their loss over the three-year period would be more than 1 million dollars. The theater owners doubted the loss figures and charged pay TV promoters were attempting to "gouge" the public.

RKO and Zenith estimated they would have some 50,000 subscribers over the three-year period. There would be no commercials during the 40 hours of pay TV over the channel. There have been numerous attacks in Congress against the Hartford experiment. Chairman Emanuel Celler (D., N. Y.) of the House Judiciary Committee told the FCC last fall that Congress should decide whether to allow the experiment.

## Union Carbide Names Thomas

Philip A. Thomas has been promoted to assistant director—development for Union Carbide Plastics Co. According to the announcement by Dr. R. F. Clash, director-development, Mr. Thomas will coordinate the company's development activities on Bakelite Brand polyethylene, vinyl, phenolic, polystyrene, and epoxy resins, as they relate to the molding, bonding and laminating fields. He will be located at Bound Brook, N. J., where the company maintains its research and development center.

**Charles W. Ebersold, general manager, merchandising, Illinois Bell Telephone Co., will lead the 1961 Crusade of the American Cancer Society, Illinois division, as state chairman, Wallace W. Tudor, vice president, personnel & employe relations, Sears, Roebuck & Co., and national Crusade chairman announced on Jan. 18.**

## Founding Family Marks 60th Anniversary of Ark. Company

An Arkansas Independent telephone company—The De Queen Telephone Co.—whose ownership has remained in one family since its inception in 1900, observed its 60th anniversary by holding an open house.

The 60th anniversary open house also provided an opportunity for the company to show the public its new building and new automatic-dial equipment at De Queen.

The De Queen company's four exchanges have been converted to dial operation in a $350,000 expansion and modernization program.

The company was founded in 1900, by the late J. A. Wommack, who sold his drug store in 1902 to devote full time to the telephone business. He managed the company until his death in 1935. J. E. Wommack then headed the company from 1935 to 1941. Waverly Wommack was manager from 1941, until his death in 1946.

In 1947, J. E. Wommack returned to


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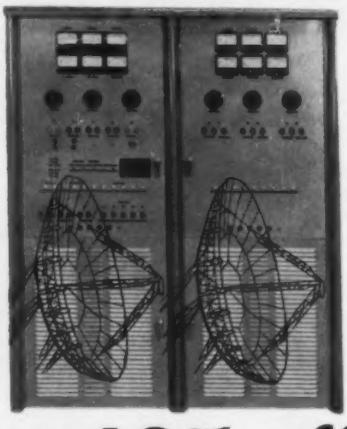

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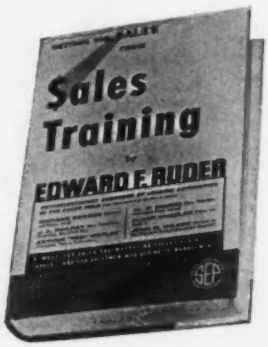


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**J. E. Wommack, president of De Queen (Ark.) Telephone Co., in front of crossbar equipment in De Queen exchange.**

the De Queen company, after 15 years of service with ITT Kellogg, and has been president and manager since.

A feature of the company's expansion program is the concentration on building rural lines. Whereas less than 50 rural subscribers were served 10 years ago, there are today 426 rural customers served out of the company's four exchanges. This represents one-fourth of total stations.

## Fulton Named President of Sequoia Wire & Cable Co.

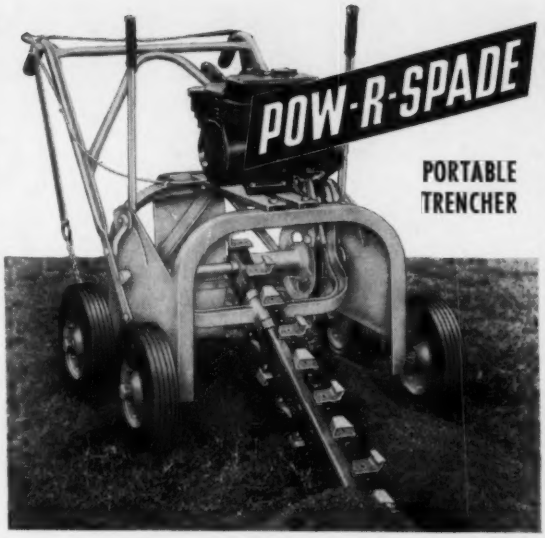
Robert B. Fulton was elected president of the Sequoia Wire & Cable Co., a wholly-owned subsidiary of the Anaconda Wire & Cable Co., it was announced on Jan. 5. Sequoia produces specialized insulated wire and cable for missiles, aviation and electronics manufacturers, especially in California, in Washington, and in the Pacific Coast area.

Other company officers elected are William L. Grey, executive vice president; James L. Vincent, secretary and treasurer; and Herbert B. Fields, assistant secretary and treasurer.

Directors named are David E. Allen, William H. Benton, Mr. Fulton, Mr. Grey, Mr. Vincent, Richard B. Steinmetz, and John L. Tindale.

Mr. Fulton assumed responsibility for the operation of Sequoia, effective immediately.

He was manager of the Orange, Cal., plant of Anaconda Wire & Cable Co. from 1958, until this year, and has held several important supervisory and executive positions with Anaconda in this country and in Mexico.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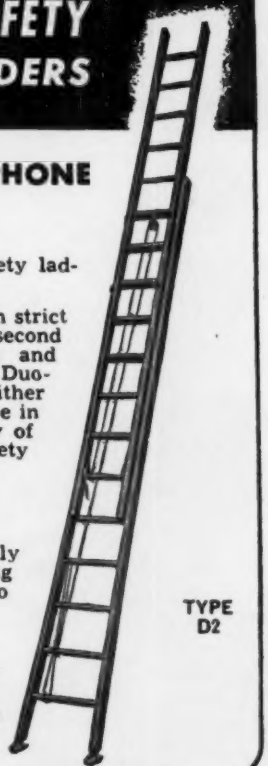

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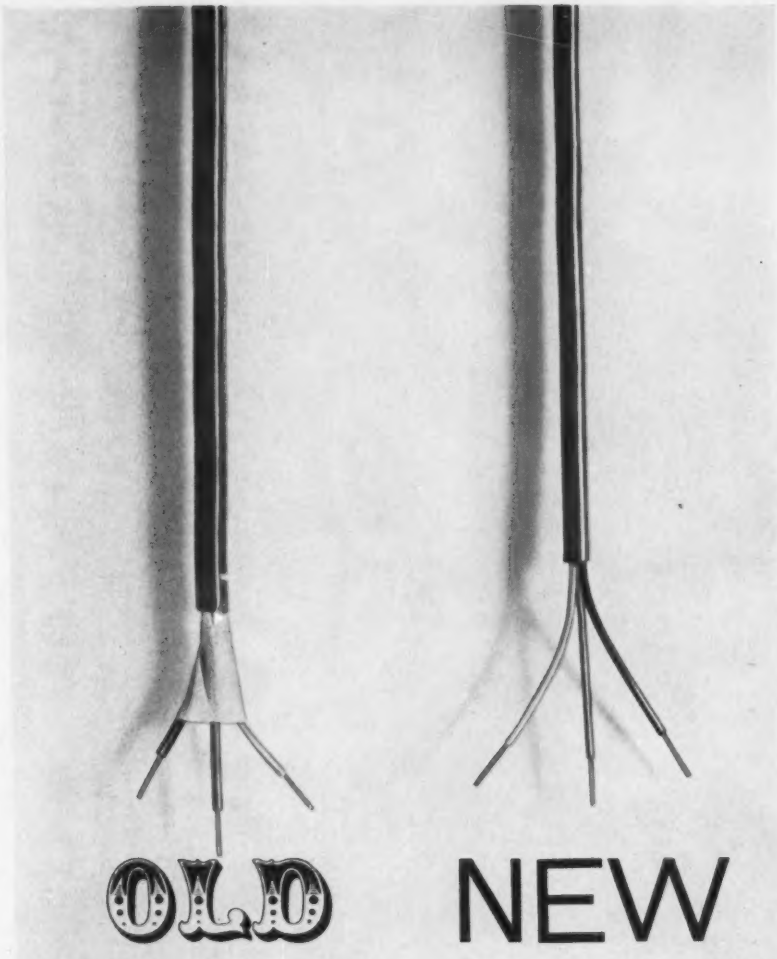


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## McGuinness In Charge of Lenkurt Government Office

Lenkurt Electric will open a new Rome, N. Y. branch office of its government relations department on Feb. 1. The Rome area previously had been covered by Lenkurt's eastern area headquarters at Washington, D. C.

E. J. McGUINNESS

Communications engineer Edward J. McGuinness has been placed in charge at Rome and will be responsible for the northeastern area—Griffiss Air Force Base and Hansen Field at Bedford, Mass. The address of the new office is 225 North Washington St.

Before joining Lenkurt last year, Mr. McGuinness was a sales engineer for the Stromberg-Carlson Co., at Rochester, N. Y.

He was employed as a plant maintenance supervisor by the General Telephone Co. of Upstate New York from 1951 until going to Stromberg-Carlson in 1956.

From 1946 to 1956, he held a variety of installation and supervisory positions with Western Electric Co. at Syracuse and Utica, N. Y.

He is a graduate of the Utica Free Academy.

## R. T. Josey Jr. Joins C&D Sales Staff in Atlanta

R. T. Josey Jr., 1361 Byrere Terrace, S. W., Atlanta, Ga. is now with the sales organization of C & D Batteries, division of The Electric Autolite Co., of Conshohocken, Pa. The company announced that Mr. Josey is associated with Mark C. Pope Associates, C & D's representative in the Atlanta area.

C & D manufactures industrial storage batteries to power electric lift trucks and for the telephone and railroad industries, as well as for other

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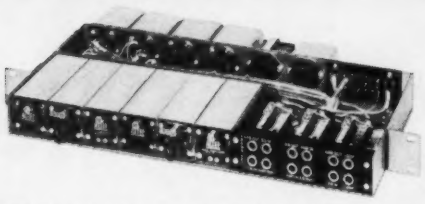

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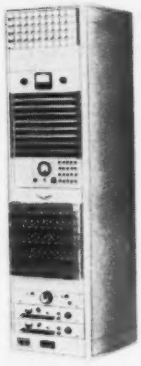
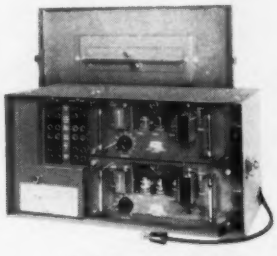
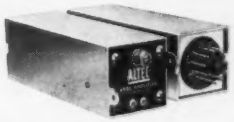


Transistorized Repeater-Amplifier Terminating Equipment



S-17 Amplifier System



455A Amplifier

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- 7300 telephone repeater panel which may be used for 2 wire-4 wire, 2 wire-2 wire, or 4 wire-4 wire applications, and is equipped with test circuit jacks and accommodates the following plug-in items on standard 19" relay rack—1 rack unit of 1¾" height:
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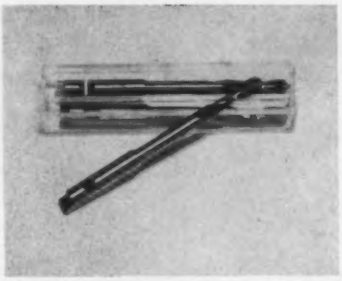

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industrial applications. Sales and service offices are located in principal cities across the country.

Previously, Mr. Josey had been with the Georgia Power Co.

Mr. Josey received his technical training at the Georgia Tech engineering evening school where he studied electrical technology.

## New Marketing Division To Serve Exide, Nickel-Alkaline

A new sales and service organization—the Exide Industrial Marketing Division—has been created by The Electric Storage Battery Co. to serve as the marketing arm for its Exide Industrial Division and its new Nickel-Alkaline Division.

It combines into one unit the nationwide Exide industrial sales and service engineering facilities with those of the former Edison Storage Battery Division of Thomas A. Edison Industries, McGraw-Edison Co., now called the Nickel-Alkaline Division.

The Nickel-Alkaline Division, which manufactures nickel-iron and other types of alkaline batteries, was purchased from Edison by ESB in August, 1960.

The new marketing organization is headed by Exide's vice president—marketing, C. J. Moore.

Exide Industrial marketing division offers lead-acid, nickel-cadmium, nickel-iron and other specialized types of batteries; rectifier and motor-generator types of battery chargers; charge control devices; emergency lighting equipment and other accessories used in telephone service and other communications, electric industrial truck, mining, railway, electric utility, marine, aircraft and military service.

The division has field sales and service engineering offices in 52 cities.

**Thomas A. Boyd, executive vice president of General Telephone & Electronics Corp., has been appointed city-wide chairman of the commerce and industry committee for the 1961 fund campaign of the American Red Cross in Greater New York, it was announced on Jan. 16 by E. C. McDonald, chairman of the New York campaign. Mr. Boyd will supervise the organization and operation of more than 300 volunteer soliciting divisions in the business, financial, industrial and commercial fields in the five New York boroughs. He will be assisted by his deputy chairman, George W. Griffin Jr., who is a vice president of General Telephone & Electronics Corp.**

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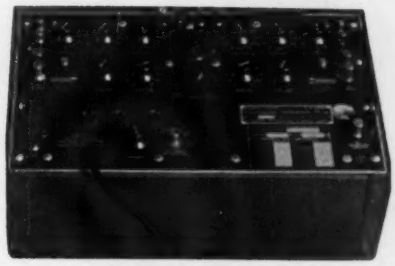

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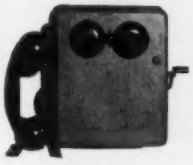

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